

# Appendix E

## Geologic and Hydrogeologic Supporting Information



URS Operating Services

SOIL BORING LOG / MONITORING WELL CONSTRUCTION DIAGRAM

Boring / Well Number: <b>EPA-MW-01</b>	TDD Name/Project Number: <b>Mount Olivet 7580314.00</b>	Site Location: <b>Salt Lake City, Utah</b>	
Boring Depth (ft) X Diameter (in): <b>404.0 x 10</b>		Drilling Method: <b>Air Rotary w/advance casing</b>	
Well Contractor Name: <b>Layne Christenson</b>		Logged by: <b>John Noto, Bill LaRow</b>	
Ground Surface Elevation (ASL): <b>4662.54</b>	Top of Casing Elevation (ASL): <b>4662.18</b>	Lat. <b>N 40 45'15.188"</b> Long. <b>W 111 50'41.959"</b>	Northing <b>3274.49</b> Easting <b>6776.38</b>
Date Started: <b>6/16/98</b>	Date Completed: <b>6/30/98</b>	Additional Comments: <b>TOC Elevation deep well: 4662.20</b>	

Lithologic Description	USCS	Graphic Log	Depth (feet b.g.s.)	Well Construction Details	Sample no.	Sample type *	Blow count	PID / FID (ppm)
Fill; silty w/gravel	ML		0	Bentonite chips, PVC casing				
Fill; sandy w/gravel	SW		5					
Gravelly sand; reddish brown, fg-vfg sand, angular pebbles, dry	SW		10					
			15					
			20					
			25					
Sandy gravel; tan-brown	GW		30					
Gravelly sand;	SW		35					
Clay silty gravel; red/brown, 20-50% silt. Clayey silt layer 1" thick, >2" diameter., angular igneous. pebbles, dry	GC		40					
			45					
Sandy gravel; reddish brown, fg sand, moist	GM		50					
			55					
Clay; red, <10% gravel, highly plastic, very soft, moist	CL		60					
Gravelly sand, red, fg,	SW		62					
Gravelly sandy clay; red, moist	CL		64					
Clay, red, high plasticity, very soft, dry	CL		66					
Gravelly sand; tan-brown, fg-mg sand, rounded <1" pebbles, some silt, dry	SW		70					
			75					
Sand; red-brown, vfg, well sorted dry	SP		78					
Sandy gravel; red, wet at 80' bgs	GW		80					
Sandy clay with gravel; red, wet @ 82' - 84'	CL		82					
Silty sandy gravel; red, 20 - 40% gravel, <1" diameter, rounded, nonspherical pebbles,	GM		85					

SS (split spoon) HSA (hollow stem auger) MC (Geoprobe macrocore) CT (cuttings)

Observations	Date:	<b>6/30/98</b>	<b>10/22/98 (S)</b>	<b>10/22/98 (D)</b>	
Static Water Level (from TOC)	Level:	<b>154.6" bgs (S)</b>	<b>153.9</b>	<b>182.2</b>	
Static Water Level (ASL)	Level:		<b>4508.28</b>	<b>4479.98</b>	



Boring / Well Number: EPA-MW-01      TDD Name/Project Number: 7580314.00      Site Location: Salt Lake City, Utah

Lithologic Description	USCS	Graphic Log	Depth (feet b.g.s.)	Well Construction Details	Sample no.	Sample type *	Blow count	PID / FID (ppm)
wet @ 95' - 98'			90					
Silty sandy gravel; tan-brown, dry	GM		95					
Silty sand with gravel; red, vfg sand, <10% gravel, dry	SM		100					
			105					
			110					
			115					
			120					
			125					
Silty sandy gravel; red, 20 - 40% gravel, dry	GM		130					
			135					
			140					
			145					
Sandy clay; red, slightly plastic, moist	CI		150					
Silty sandy gravel; wet @ 154 - 156"bgs	GM		155					
			160					
Clayey sand; red moderately plastic, soft, moist	SC		165					
			170					
Sandy clay with gravel; moderately plastic, soft, dry	SC		175					7
			180	10-20 mesh sand				
			185	.010 slot, 2" PVC screen				
			190					
			195					
			200					
			205					

\* SS (split spoon) HSA (hollow stem auger) MC (Geoprobe macrocore) CT (cuttings)

Observations	Date:	6/30/98	10/22/98 (S)	10/22/98 (D)
Static Water Level (from TOC)	Level:	154.6" bgs (S) ∇	153.9	∇ 182.2
Static Water Level (ASL)	Level:		4508.28	4479.98



Boring / Well Number: EPA-MW-01      TDD Name/Project Number: Mount Olivet 7580314.00      Site Location: Salt Lake City, Utah

Lithologic Description	USCS	Graphic Log	Depth (feet b.g.s.)	Well Construction Details	Sample no.	Sample type *	Blow count	PID / FID (ppm)
Clayey silt; brown-red, trace gravel, low plasticity, moist - wet @ 210	ML		210	Bentonite chips				
silty sand; brown-red, trace gravel	SM		215					
Sandy clay, brown-red, moist	SC		220					
Silty clay with gravel, dry	GM		225					
Silty - clayey sand; trace gravel, dry	SC		230					
			235					
			240					
			245					
Silty gravel; dry	GM		250					
			255					
Gravel; well sorted, subangular to angular, wet	GP		260					
			265					
			270					
			275					
			280					
			285					
			290					
			295					
			300					
			305					
			310					
			315					
			320					

SS (split spoon) HSA (hollow stem auger) MC (Geoprobe macrocore) CT (cuttings)

Observations	Date:	6/30/98	10/22/98 (S)	10/22/98 (D)	
Static Water Level (from TOC)	Level:	154.6" bgs (S) $\nabla$	153.9	$\nabla$ 182.2	
Static Water Level (ASL)	Level:		4508.28	4479.98	





Boring / Well Number: EPA-MW-01      TDD Name/Project Number: Mount Olivet 7580314.00      Site Location: Salt Lake City, Utah

Lithologic Description	USCS	Graphic Log	Depth (feet b.g.s.)	Well Construction Details	Sample no.	Sample type *	Blow count	PID / FID (ppm)
				<p>10-20 mesh sand</p> <p>.010 slot, 4" diameter PVC screen</p>				

\* SS (split spoon) HSA (hollow stem auger) MC (Geoprobe macrocore) CT (cuttings)

Observations	Date:	6/30/98	10/22/98 (S)	10/22/98 (D)		
Static Water Level (from TOC)	Level:	154.6" bgs (S)	153.9	182.2		
Static Water Level (ASL)	Level:		4508.28	4479.98		



**URS Operating Services**

**SOIL BORING LOG / MONITORING WELL CONSTRUCTION DIAGRAM**

Boring / Well Number: <b>EPA-MW-02</b>	TDD Name/Project Number: <b>Mount Olivet 7580314.00</b>	Site Location: <b>Salt Lake City, Utah</b>	
Boring Depth (ft) X Diameter (in): <b>205.5 x 8</b>		Drilling Method: <b>Air Rotary w/advance casing</b>	
Well Contractor Name: <b>Layne Christenson</b>		Logged by: <b>John Noto</b>	
Ground Surface Elevation (ASL): <b>4678.41</b>	Top of Casing Elevation (ASL): <b>4680.41</b>	Lat. <b>N 4045'14.756"</b> Long. <b>W 111 50'35.282"</b>	Northing <b>3228.73</b> Easting <b>7490.2</b>
Date Started: <b>7/20/98</b>	Date Completed: <b>7/22/98</b>	Additional Comments:	

Lithologic Description	USCS	Graphic Log	Depth (feet b.g.s.)	Well Construction Details	Sample no.	Sample type *	Blow count	PID / FID (ppm)
Silly sand with gravel, grey angular to subrounded pebbles, dry	GM		0	Bentonite pellets				
Clayey Sand, reddish brown, low plasticity	SC		20					
Gravelly sand with silt; reddish brown, grey sandstone pebbles, angular-subrounded, nonspherical, dry	GM		25					
Gravelly sand with silt; reddish brown	GM		30					
Gravelly silt with sand, reddish brown, dry	GM		35					
Gravelly sand; reddish brown, fg sand, slightly cohesive when damp, dry	GM		40					
Gravelly sand; dark reddish brown, coarse grained, dry	SW		50					
Gravelly sand with silt; reddish brown, dry	GM		60					
Sand; reddish brown, medium grained, moderately sorted, slightly cohesive, with gravel, dry	SW		75					
Gravelly sand with silt; reddish brown, dry	GM		80					

SS (split spoon) HSA (hollow stem auger) MC (Geoprobe macrocore) CT (cuttings)

Observations	Date:	<b>7/22/98</b>	<b>10/22/98</b>		
Static Water Level (from TOC)	Level:	<b>180 bgs</b>	<b>164.9</b>		
Static Water Level (ASL)	Level:		<b>4515.51</b>		



Boring / Well Number: EPA-MW-02      TDD Name/Project Number: Mount Olivet 7580314.00      Site Location: Salt Lake City, Utah

Lithologic Description	USCS	Graphic Log	Depth (feet b.g.s.)	Well Construction Details	Sample no.	Sample type *	Blow count	PID / FID (ppm)
			95					
			100					
			105					
			110					
			115					
Sand; reddish brown, fg-mg sand, <10% gravel, dry	SW		120					
			125					
			130					
			135					
			140					
			145					
			150					
Clayey sand; red, low plasticity, slightly cohesive, dry	SC		155					
Gravelly sand with silt; reddish brown, 20-25% gravel, not cohesive, fg-mg sand, rounded nonspherical pebbles, dry	SW		160					
Silt; reddish brown, trace gravel, slightly plastic/cohesive, dry	ML		165					
Gravelly silty sand;	SW		170	10-20 mesh sand				
Gravelly sand; reddish brown >25% gravel, dry	GW		175	.010 screen				
Sandy clay; reddish brown, <5% gravel, soft, mod. plasticity, weak bedding, moist at 182' bgs	SC		180					
Sandy gravelly clay, 4" layer, w/black "spotty" banding. Sand; 4" layer trace clay, soft, wet	GC		185		1		11/12/21(12),5	
Sandy clayey gravel; reddish brown, wet, mod. plasticity, 25-50% gravel, wet	GC		190					
			195					
Sand; wet	SP		200					
			205					

\* SS (split spoon) HSA (hollow stem auger) MC (Geoprobe macrocore) CT (cuttings)

Observations	Date:	7/22/98	10/22/98			
Static Water Level (from TOC)	Level:	180 bgs	164.9			
Static Water Level (ASL)	Level:		4515.51			



Boring / Well Number: EPA-MW-03		TDD Name/Project Number: Mount Olivet 7580314.00		Site Location: Salt Lake City, Utah	
Boring Depth (ft) X Diameter (in): 210.0 x 8			Drilling Method: Air Rotary w/advance casing		
Well Contractor Name: Layne Christenson			Logged by: Bill LaRow		
Ground Surface Elevation (ASL): 4695.54		Top of Casing Elevation (ASL): 4697.98		Lat. N 40 45'21.005" Northing 3861.5	
				Long. W 111 50'35.913" Easting 7444.02	
Date Started: 7/28/98		Date Completed: 7/30/98		Additional Comments:	

Lithologic Description	USCS	Graphic Log	Depth (feet b.g.s.)	Well Construction Details	Sample no.	Sample type *	Blow count	PID / FID (ppm)
Silty sand with gravel, brown, subrounded gravel, dry	GM		0 5 10 15 20 25 30 35 40 45 50 55 60 65	bentonite granuals, 4" PVC pipe				
Silty sand with gravel, same as above, reddish brown, coarser sand, less gravel, dry	GM		70 75 80					
Silty sand with gravel, as above, sand better sorted, dry	GM		85 90 95					

SS (split spoon) HSA (hollow stem auger) MC (Geoprobe macrocore) CT (cuttings)

Observations	Date:	7/29/98	10/22/98		
Static Water Level (from TOC)	Level:	190.5 bgs	189.75		
Static Water Level (ASL)	Level:		4508.23		





Boring / Well Number: EPA-MW-03      TDD Name/Project Number: Mount Olivet 7580314.00      Site Location: Salt Lake City, Utah

Lithologic Description	USCS	Graphic Log	Depth (feet b.g.s.)	Well Construction Details	Sample no.	Sample type	Blow count	PID / FID (ppm)
			100 105 110 115 120 125 130 135 140 145 150					
Silty sand with gravel, as above, more silty, less gravel, dry	SM		150 155					
as above, slightly moist at 155	SM		155 160					
Silty sand with gravel, as above, dry	GM		160 165 170 175 180 185					
Silty to clayey sand, reddish brown, low plasticity, less gravel, slightly moist	SC		185 190	bentone seal				
Silty sand, moist at 191 feet bgs	SM		190 195	10-20 mesh sand filter pack .010 PVC screen in filter pack				
Silty sand with gravel, reddish brown, moist	SM		195 200 205 210					

\* SS (split spoon) HSA (hollow stem auger) MC (Geoprobe macrocore) CT (cuttings)

Observations	Date:	7/29/98	10/22/98			
Static Water Level (from TOC)	Level:	190.5 bgs	▼ 189.75			
Static Water Level (ASL)	Level:		4508.23			

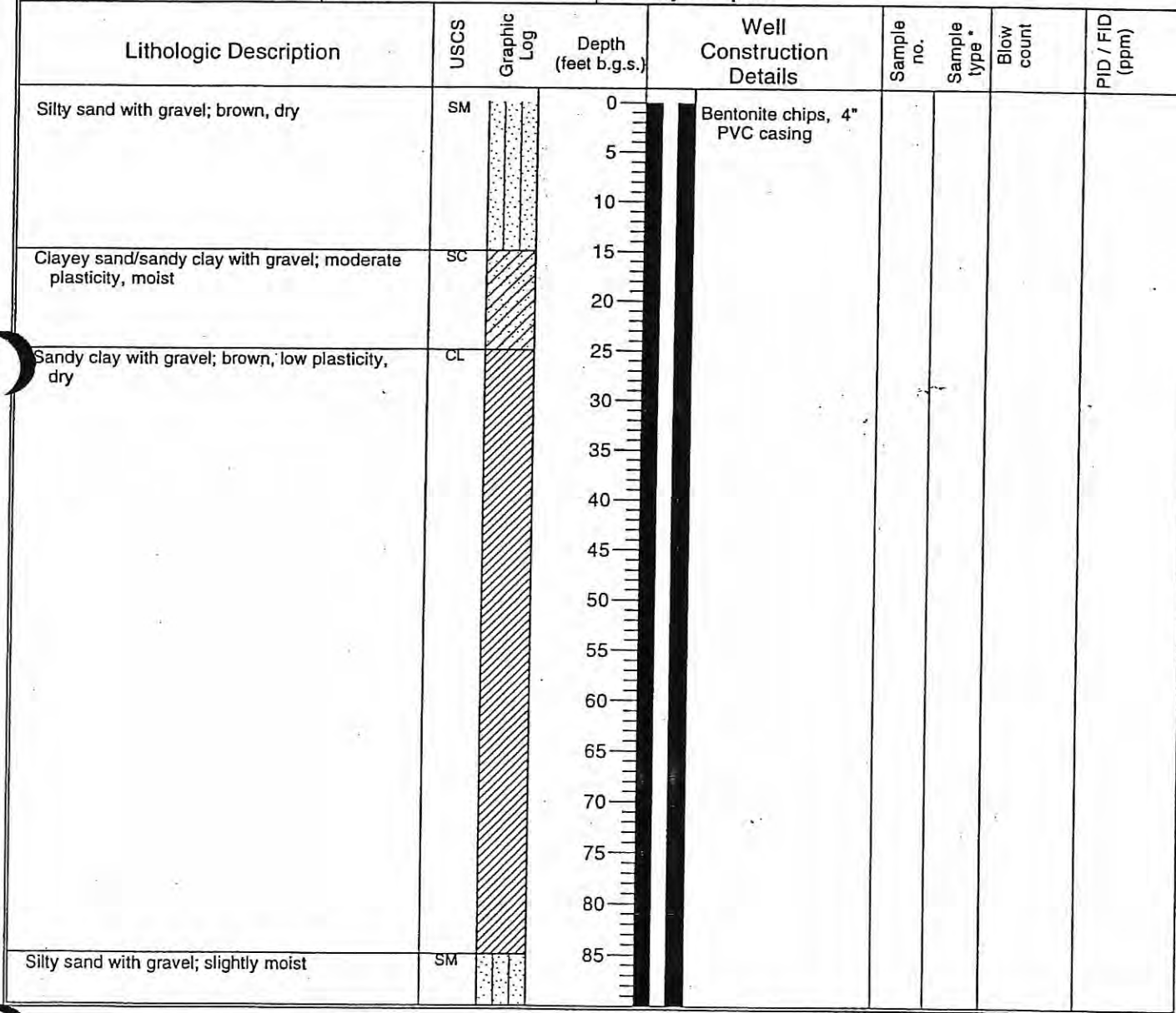




**URS Operating Services**

**SOIL BORING LOG / MONITORING WELL CONSTRUCTION DIAGRAM**

Boring / Well Number: <b>EPA-MW-04</b>	TDD Name/Project Number: <b>Mount Olivet 7580314.00</b>	Site Location: <b>Salt Lake City, Utah</b>
Boring Depth (ft) X Diameter (in): <b>173.0 x 8</b>	Drilling Method: <b>Air Rotary w/advance casing</b>	
Well Contractor Name: <b>Layne Christenson</b>	Logged by: <b>Bill LaRow</b>	
Ground Surface Elevation (ASL): <b>4654.15</b>	Top of Casing Elevation (ASL): <b>4654.35</b>	Lat. <b>N 40 45'07.680</b> Long. <b>W 111 50'37.460"</b> Northing <b>2513.17</b> Easting <b>7319.76</b>
Date Started: <b>7/30/98</b>	Date Completed: <b>8/1/98</b>	Additional Comments: <b>Sunnyside park</b>



SS (split spoon) HSA (hollow stem auger) MC (Geoprobe macrocore) CT (cuttings)

Observations	Date:	<b>7/30/98</b>	<b>10/22/98</b>		
Static Water Level (from TOC)	Level:	<b>▽ 139</b>	<b>▽ 131.35</b>		
Static Water Level (ASL)	Level:	<b>4515.35</b>	<b>4523.00</b>		



Boring / Well Number: **EPA-MW-04**      TDD Name/Project Number: **Mount Olivet 7580314.00**      Site Location: **Salt Lake City, Utah**

Lithologic Description	USCS	Graphic Log	Depth (feet b.g.s.)	Well Construction Details	Sample no.	Sample type *	Blow count	PID / FID (ppm)
			90 95 100 105 110 115 120 125 130 135					
Gravel with clay; wet	GW		135 140 145 150 155 160 165 170	10-20 mesh sand  .010 PVC screen				

\* SS (split spoon) HSA (hollow stem auger) MC (Geoprobe macrocore) CT (cuttings)

Observations	Date:	7/30/98	10/22/98			
Static Water Level (from TOC)	Level:	▽ 139	▽ 131.35			
Static Water Level (ASL)	Level:	4515.35	4523.00			



URS Operating Services

SOIL BORING LOG / MONITORING WELL CONSTRUCTION DIAGRAM

Boring / Well Number: EPA-MW-05		TDD Name/Project Number: Mount Olivet 7580314.00		Site Location: Salt Lake City, Utah	
Boring Depth (ft) X Diameter (in): 221.0 x 6			Drilling Method: Air Rotary w/advance casing		
Well Contractor Name: Layne Christenson			Logged by: John Noto		
Ground Surface Elevation (ASL): 4732.45		Top of Casing Elevation (ASL): 4732.09		Lat. N 40 45'19.987	Northing 3753.76
				Long. W 111 50'20.128"	Easting 8658.65
Date Started: 8/28/98		Date Completed: 8/31/98		Additional Comments: VA Hospital, bldg. 4 lot	

Lithologic Description	USCS	Graphic Log	Depth (feet b.g.s.)	Well Construction Details	Sample no.	Sample type	Blow count	PID / FID (ppm)
Gravelly sand; brown, fill, dry	SW		0	Bentonite chips, 2" PVC casing				
			5					
			10					
			15					
			20					
Gravelly sand; reddish brown, silty, dry	GM		25					
			30					
Sand,; reddish brown, fg-mg, slightly cohesive, some gravel, dry	SW		35					
Silt	ML		40					
Sand; same as above	SW		45					
Gravelly sand; reddish brown, subrounded to rounded nonspherical SS/quartzite pebbles, silty-sandy matrix, dry	SW		50					
			55					
			60					
			65					
			70					
			75					
			80					
			85					
			90					
			95					

SS (split spoon) HSA (hollow stem auger) MC (Geoprobe macrocore) CT (cuttings)

Observations	Date:	10/22/98		
Static Water Level (from TOC)	Level:	▼ 205.5		
Static Water Level (ASL)	Level:	4526.59		



Boring / Well Number: EPA-MW-05      TDD Name/Project Number: 7580314.00      Site Location: Salt Lake City, Utah

Lithologic Description	USCS	Graphic Log	Depth (feet b.g.s.)	Well Construction Details	Sample no.	Sample type *	Blow count	PID / FID (ppm)
Silty gravelly sand; reddish brown, >20% gravel, dry	GM		100	<p>10-20 mesh sand .010 screen 2" PVC</p>				
Silt; light brown, <10% gravel	ML		105					
Gravelly sand; reddish brown, f.g.-silty, thin silt layer @ 117', dry	SW		110					
			115					
Gravelly sand/sandy gravel; tan-brown, thin silt layer @ 127', dry	GW		120					
			125					
			130					
			135					
Silty gravelly sand; red-brown, vfg-fg sand, <10% gravel, dry	SW		140					
same as above, higher % gravel, silty @ 146-148', dry	SW		145					
			150					
			155					
			160					
Clayey silt; brown, no sand, cohesive, moderate plasticity, gravelly @ 172' dry	CL		165					
			170					
			175					
Silty sandy gravel, reddish brown, 10-50% gravel, vfg-fg sand, trace clay, low plasticity when wetted, dry	GW		180					
same as above with < .5' layers of silt/clay (indicated by drilling speed)	GW		185					
Sandy gravel; > 50% gravel, dry	GP		190					
			195					
Clay/silt; dry	ML		200					
Gravelly sand with clay/silt layers, very resistant @ 122.5-113.5', dry drilling, rig idled 5 minutes @ 113.5' water in hole,	SW SC		205					
			210					
			215					
Gravelly sand, dry	SW		220					

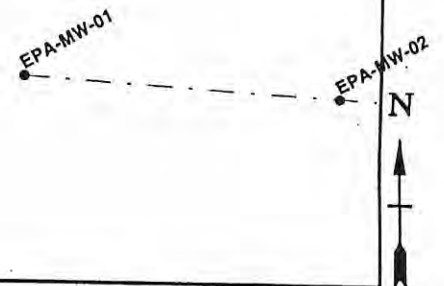
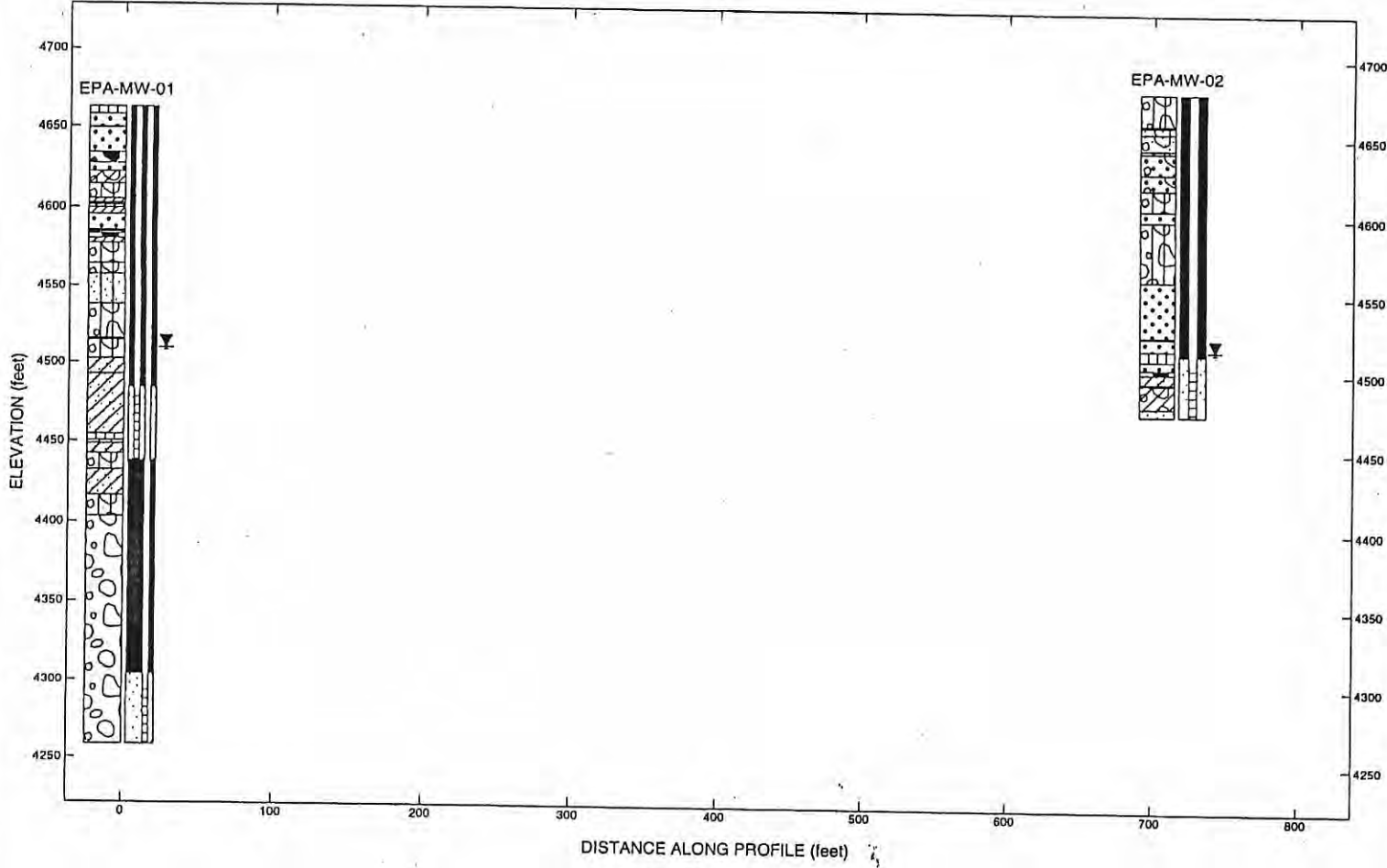
\* SS (split spoon) HSA (hollow stem auger) MC (Geoprobe macrocore) CT (cuttings)

Observations	Date:	10/22/98			
Static Water Level (from TOC)	Level:	▼ 205.5			
Static Water Level (ASL)	Level:	4526.59			



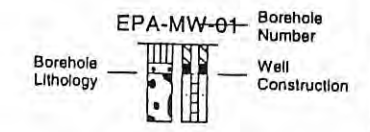
W

E



Site Map Scale 1 Inch equals 450 feet

### Explanation



- ▽ Water Level Reading at time of drilling.
- ▽ Water Level Reading after drilling.



Vertical Exaggeration: 1x

### Lithology Graphics

### Well Graphics

- |                   |                           |                                 |                                |                |
|-------------------|---------------------------|---------------------------------|--------------------------------|----------------|
| USCS Silt         | USCS Well-graded Sand     | USCS Well-graded Gravel         | USCS Clayey Gravel             | Cement grout   |
| USCS Silty Gravel | USCS Low Plasticity Clay  | USCS Poorly-graded Sand         | USCS Silty Sand                | Bentonite Seal |
| USCS Clayey Sand  | USCS Poorly-graded Gravel | USCS Poorly-graded Sandy Gravel | USCS Well-graded Gravelly Sand | Filter Pack    |
|                   |                           |                                 |                                | Well Screen    |

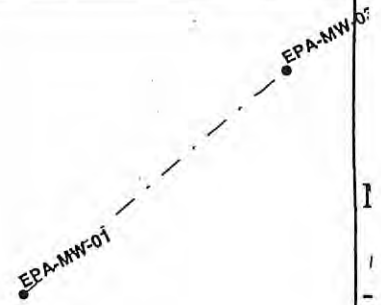
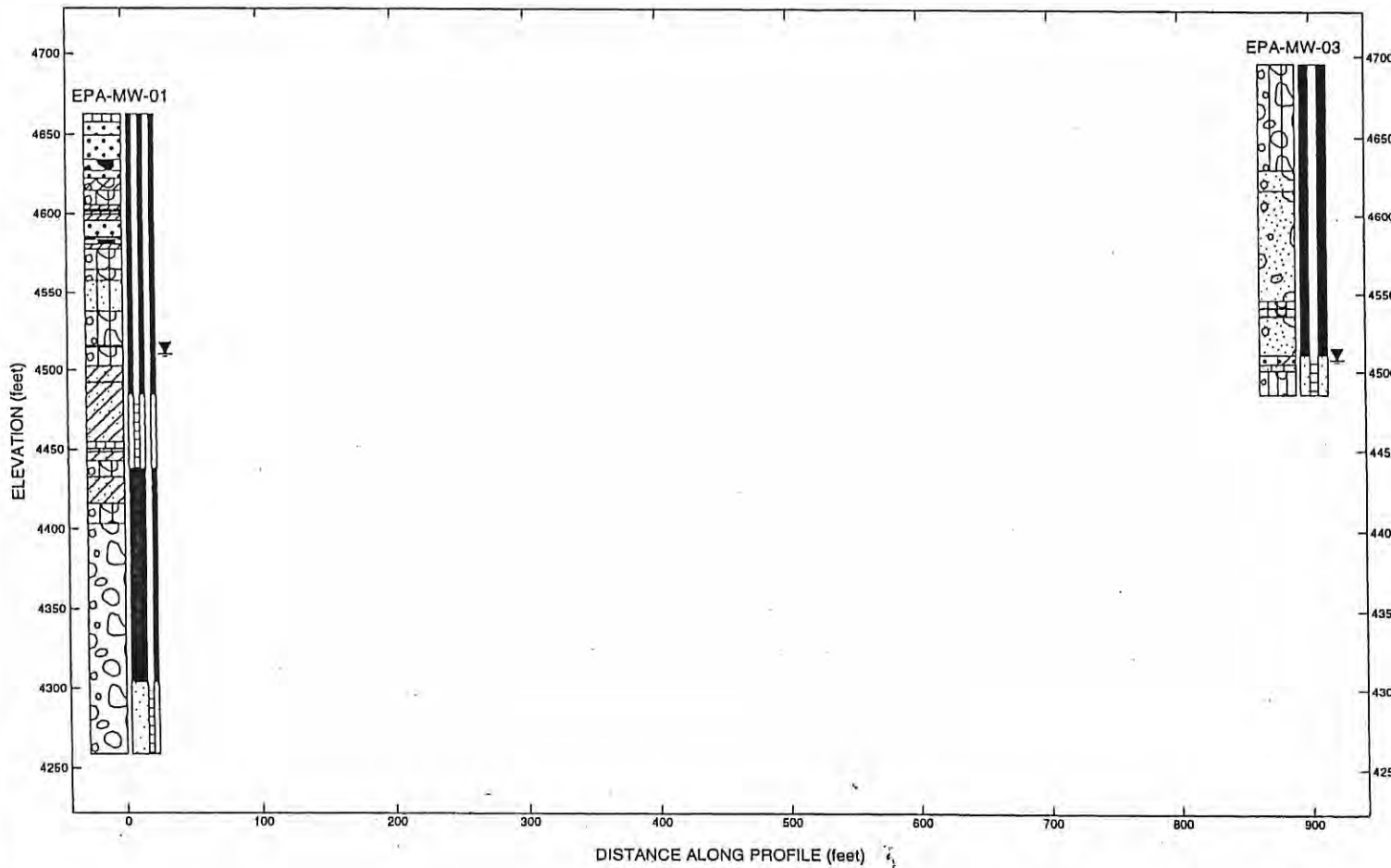
**URS OPERATING SERVICES**  
 1099 18TH STREET, SUITE 710  
 DENVER, COLORADO 80202

**Mt. Olivet Cemetery Site**  
**Lithologic Columns and Well Construction**



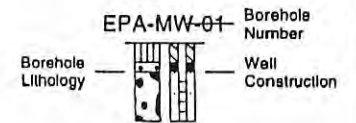
SW

NE



Site Map Scale 1 Inch equals 510 feet

**Explanation**



- ▽ Water Level Reading at time of drilling.
- ▽ Water Level Reading after drilling.



Vertical Exaggeration: 1x

**Lithology Graphics**

- |                   |                           |                                  |                    |
|-------------------|---------------------------|----------------------------------|--------------------|
| USCS Silt         | USCS Well-graded Sand     | USCS Well-graded Gravel          | USCS Clayey Gravel |
| USCS Silty Gravel | USCS Low Plasticity Clay  | USCS Poorly-graded Sand          | USCS Silty Sand    |
| USCS Clayey Sand  | USCS Poorly-graded Gravel | USCS Poorly-graded Gravelly Sand | USCS Gravelly Silt |

**Well Graphics**

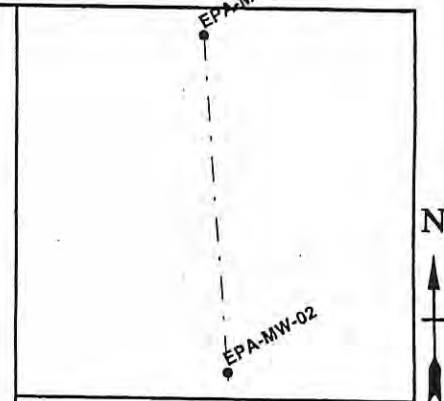
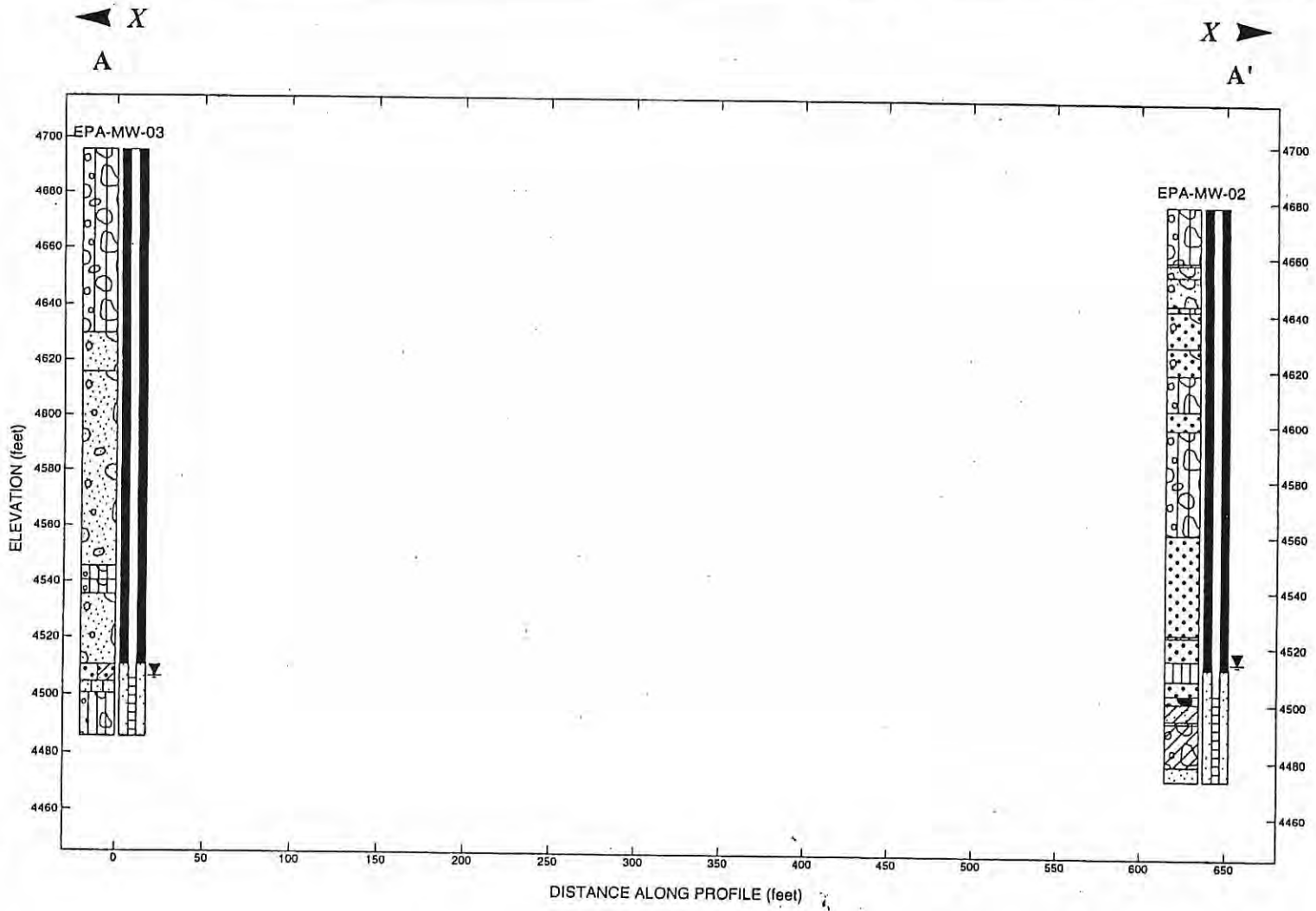
- Cement grout
- Bentonite Seal
- Filter Pack
- Well Screen
- Cement Backfill

**URS OPERATING SERVICES**

1099 18TH STREET, SUITE 710  
DENVER, COLORADO 80202

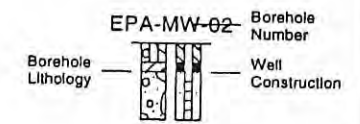
**Mt. Olivet Cemetary Site**  
Lithologic Columns and Well Construction





Site Map Scale 1 Inch equals 365 feet

### Explanation



- Water Level Reading at time of drilling.
- Water Level Reading after drilling.



Vertical Exaggeration: 1.5x

**URS OPERATING SERVICES**  
 1099 18TH STREET, SUITE 710  
 DENVER, COLORADO 80202  
**Mt. Olivet Cemetery Site A-A'**  
**Lithologic Columns and Well Construction**

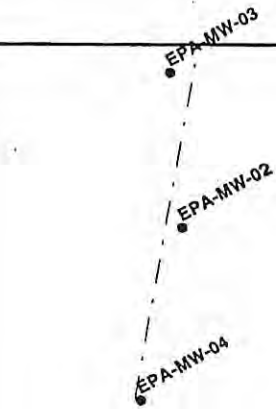
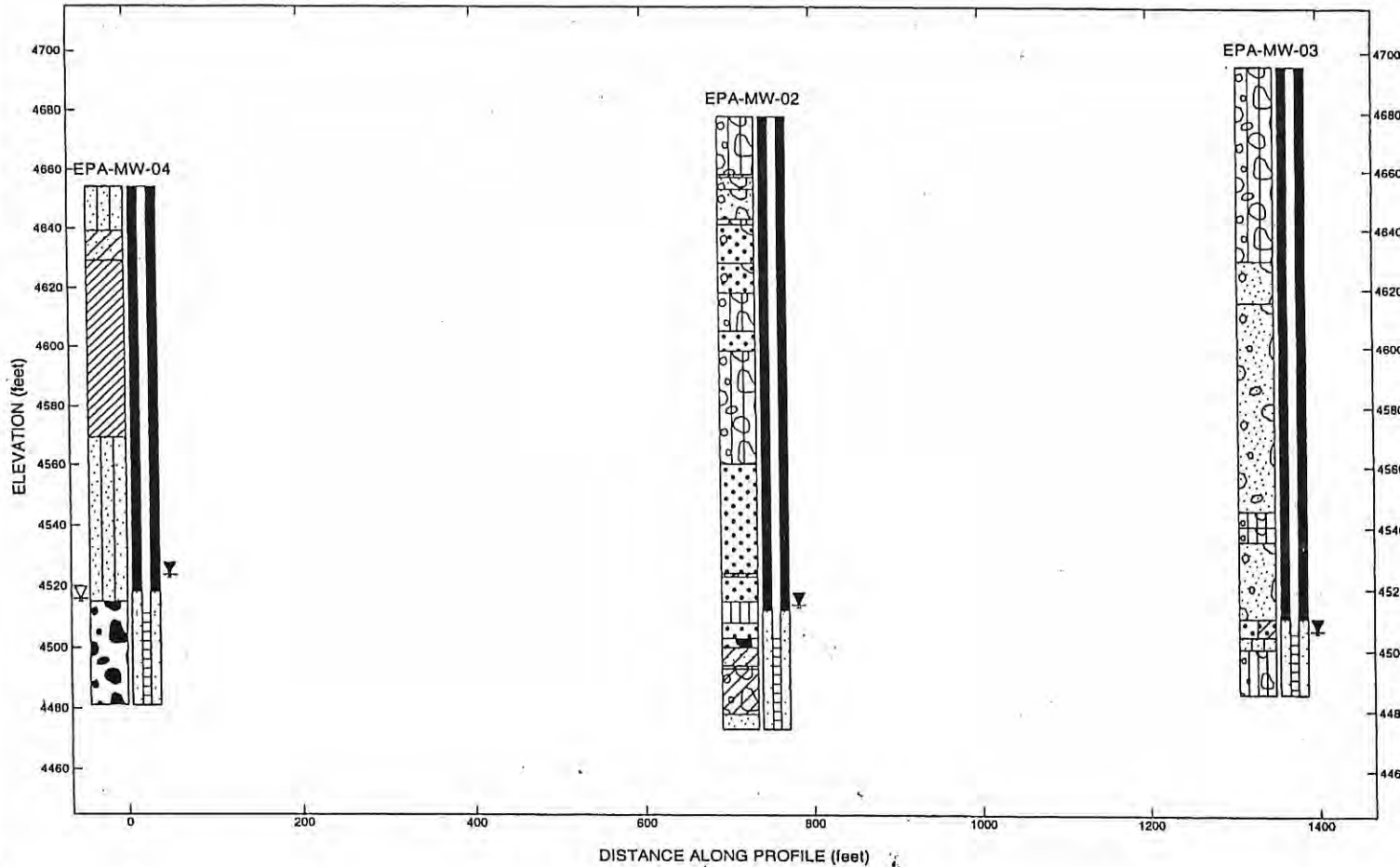


### Lithology Graphics

- |                         |                                  |                                 |                                 |
|-------------------------|----------------------------------|---------------------------------|---------------------------------|
| USCS Silty Gravel       | USCS Clayey Sand                 | USCS Poorly-graded Sandy Gravel | USCS Well-graded Gravelly Sand  |
| USCS Well-graded Sand   | USCS Silt                        | USCS Well-graded Gravel         | USCS Clayey Gravel              |
| USCS Poorly-graded Sand | USCS Poorly-graded Gravelly Sand | USCS Gravelly Silt              | USCS Well-graded Sand with Clay |

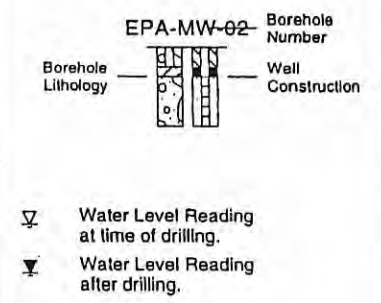
### Well Graphics

- Cement grout
- Bentonite Seal
- Filter Pack
- Well Screen



Site Map Scale 1 inch equals 790 feet

### Explanation



Vertical Exaggeration: 3.5x

### Lithology Graphics

	USCS Silty Gravel		USCS Clayey Sand		USCS Poorly-graded Sandy Gravel		USCS Well-graded Gravelly Sand
	USCS Well-graded Sand		USCS Silt		USCS Well-graded Gravel		USCS Clayey Gravel
	USCS Poorly-graded Sand		USCS Poorly-graded Gravelly Sand		USCS Gravelly Silt		USCS Well-graded Sand with Clay

### Well Graphics

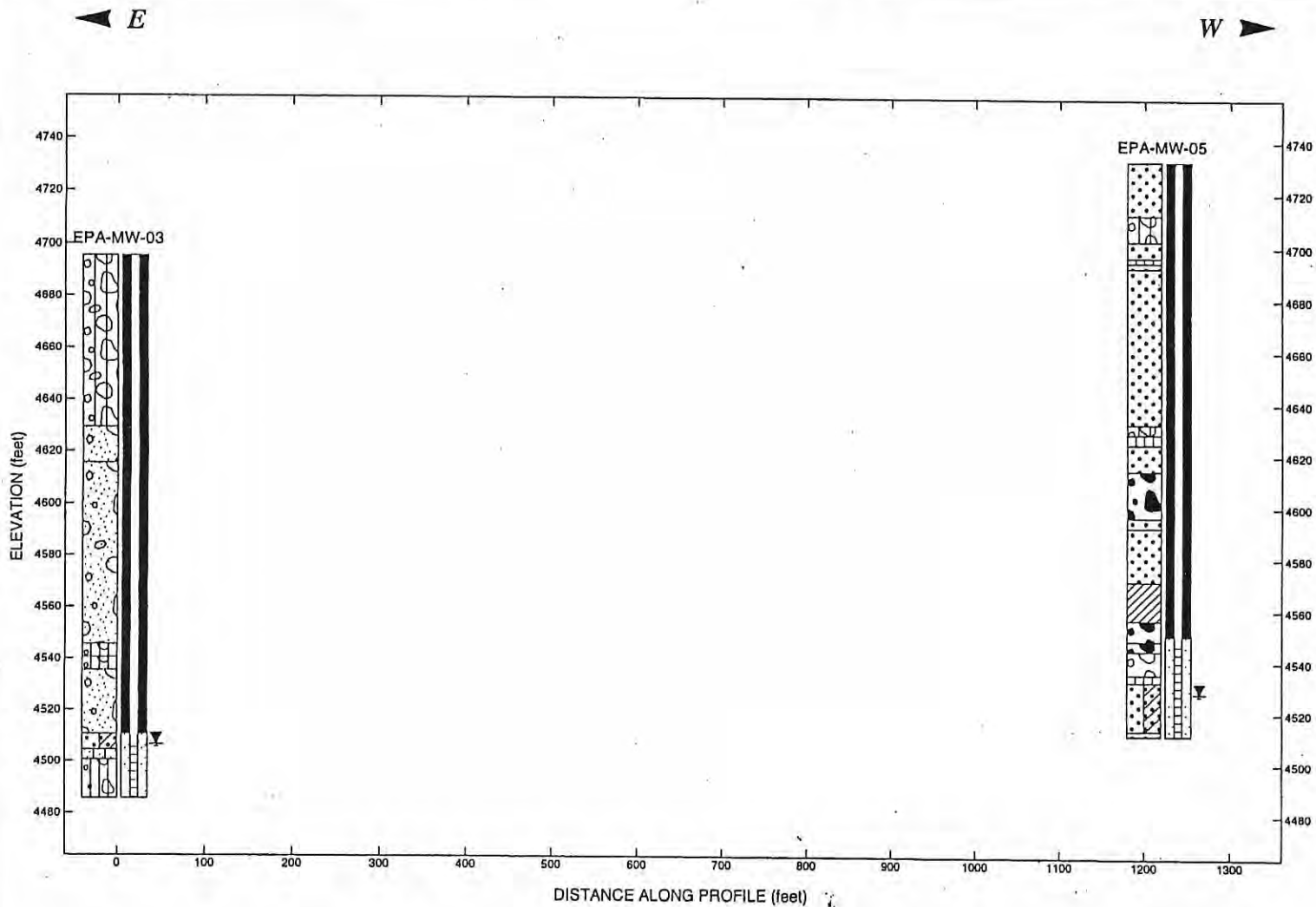
	Cement grout
	Bentonite Seal
	Filter Pack
	Well Screen

**URS OPERATING SERVICES**  
 1099 18TH STREET, SUITE 710  
 DENVER, COLORADO 80202

**Mt. Olivet Cemetery Site**  
**Lithologic Columns and Well Construction**



101\_MTOLIVET.GPJ\_FANWINLOT.GDT 3/8/99



- | Lithology Graphics |                          |  | Well Graphics                    |  |                                 |
|--------------------|--------------------------|--|----------------------------------|--|---------------------------------|
|                    | USCS Silty Gravel        |  | USCS Poorly-graded Gravelly Sand |  | USCS Gravelly Silt              |
|                    | USCS Silty Sand          |  | USCS Well-graded Sand            |  | USCS Silt                       |
|                    | USCS Low Plasticity Clay |  | USCS Poorly-graded Gravel        |  | USCS Well-graded Sand with Clay |
|                    |                          |  | USCS Well-graded Gravel          |  | Cement grout                    |
|                    |                          |  |                                  |  | Bentonite Seal                  |
|                    |                          |  |                                  |  | Filter Pack                     |
|                    |                          |  |                                  |  | Well Screen                     |

EPA-MW-03

EPA-MW-05

N

Site Map Scale 1 Inch equals 735 feet

### Explanation

EPA-MW-03

Borehole Lithology

Borehole Number

Well Construction

Water Level Reading at time of drilling.

Water Level Reading after drilling.

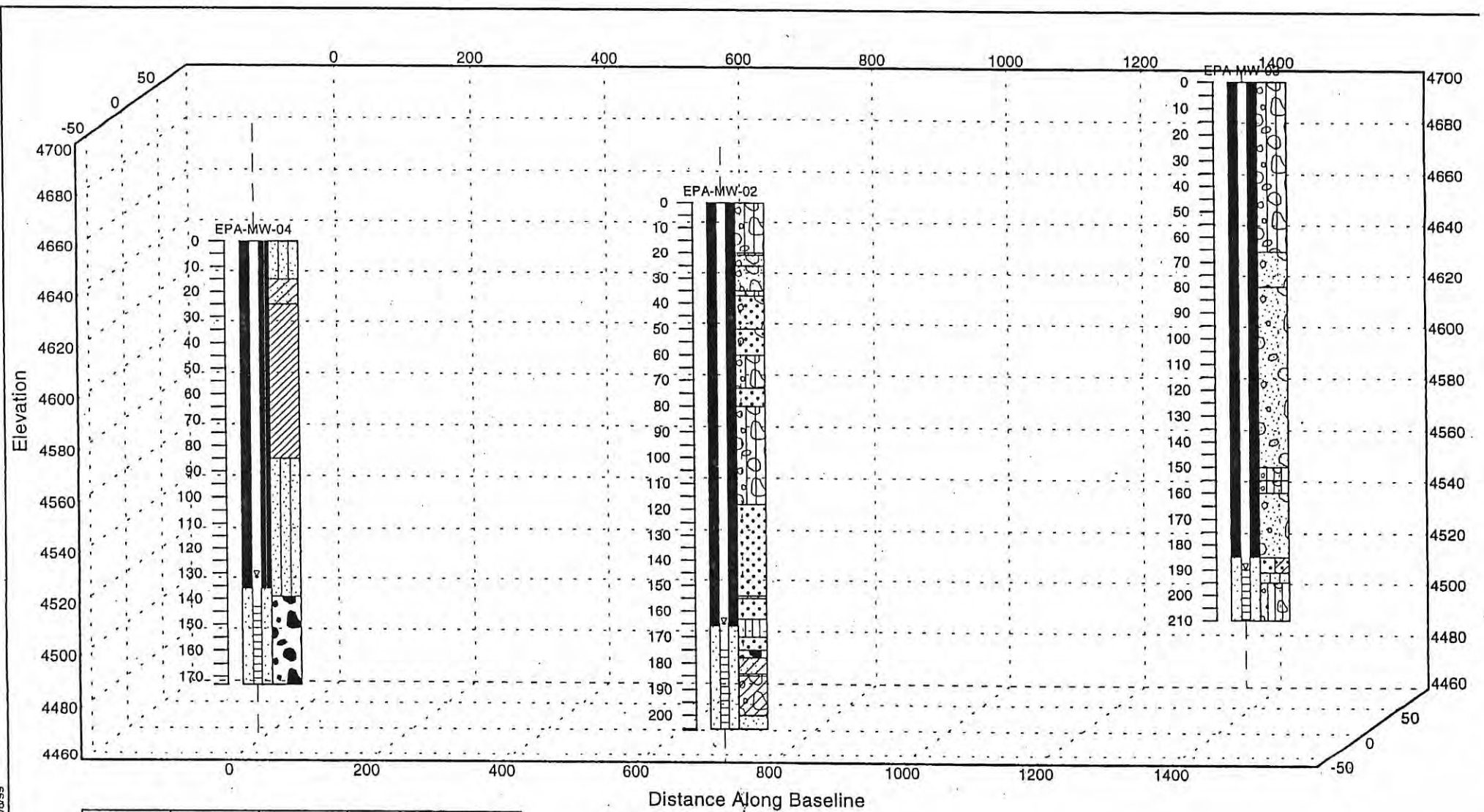
0 200

Horizontal Scale (feet)

Vertical Exaggeration: 3x

**URS OPERATING SERVICES**  
 1099 18TH STREET, SUITE 710  
 DENVER, COLORADO 80202

**Mt. Olivet Cemetery Site**  
**Lithologic Columns and Well Construction**



Borehole	North	East	Elev.	Depth
EPA-MW-02	3229	7490	4678.4	205.5
EPA-MW-03	3862	7444	4695.5	210.0
EPA-MW-04	2513	7320	4654.2	173.0

DISTANCES:  
 Beginning 0  
 Ending 1400  
 VIEWING ANGLES (degrees):  
 Horizontal 45.0  
 Vertical 30.0

Position	North	East
Left, Front	2506	7361
Right, Front	3884	7300

SUBSURFACE FENCE DIAGRAM Mt. Olivet Cemetery

PROJECT #      DATE      PLATE

IT02 MTOLIVET.GPJ FAGWGN01.GDT 3/8/99







United States Environmental Protection Agency  
 TDD: 0008/1410-07 EPA- MW-05 Replacement  
 700 South 1600 East PCE Plume WO#: 20408.012.008.0189.00  
 500 Foothills Dr. Building 16 Salt Lake City, Utah

Boring ID: EPA-MW-05R  
 Start Date: September 23, 2016  
 End Date: September 25, 2016  
 Latitude: 40.755969°  
 Longitude: -111.83918°  
 Elevation: 4744

Geologist: Roy Weindorf  
 Drilling Contractor: Cascade Drilling  
 Drilling Method: Sonic  
 Groundwater Depth (feet bgs): 215  
 Total Depth (feet bgs): 230  
 Borehole Diameter (inches): 8  
 Groundwater Elevation: 4529  
 Total Depth Elevation: 4514  
 Borehole Completion: Well Installed

Depth (feet)	Organic Vapor Levels (ppm)	Sample ID (Blow Counts)	Sample Type	Graphic Log	USCS	Lithologic Description	Well Design	Elevation (feet)
						Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.		
55	<1	Core: 15	Photo: 1402	[Pattern]	SP	<Sand Continued>	Schedule 80 - 4 Inch PVC Riser Tremie Pipe Placed Bentonite Grout	4689
60	<1	Core: 16 Core: 17	Photo: 1403	[Pattern]		53.0'-195.0' Clay: sandy, gravelly, brown, slightly moist (becomes dry with depth), soft to medium stiff, low plasticity, moderately cohesive, >30% coarse content, contains cobbles (round to sub-round, metamorphic and igneous in origin).		4684
65	<1	Core: 18		[Pattern]				4679
70	<1	Core: 19 Core: 20	Photo: 1404	[Pattern]	CL			4674
75	<1	Core: 21 Core: 22		[Pattern]				4669
80	<1	Core: 23 Core: 24	Photo: 1405	[Pattern]				4664
85				[Pattern]		85.0'-87.0' No cuttings returned.		4659
90	<1	Core: 25	Photo: 1406	[Pattern]		<Clay Continued>		4654
95	<1	Core: 26 Core: 27		[Pattern]	CL	91.0' Becomes dry and firm.		4649
100	<1	Core: 28 Core: 29	Photo: 1407	[Pattern]				4644



United States Environmental Protection Agency  
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 700 South 1600 East PCE Plume WO#: 20408.012.008.0189.00  
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Boring ID: EPA-MW-05R  
 Start Date: September 23, 2016  
 End Date: September 25, 2016  
 Latitude: 40.755969°  
 Longitude: -111.83918°  
 Elevation: 4744

Geologist: Roy Weindorf	Groundwater Depth (feet bgs): 215	Groundwater Elevation: 4529
Drilling Contractor: Cascade Drilling	Total Depth (feet bgs): 230	Total Depth Elevation: 4514
Drilling Method: Sonic	Borehole Diameter (inches): 8	Borehole Completion: Well Installed

Depth (feet)	Organic Vapor Levels (ppm)	Sample ID (Blow Counts)	Sample Type	Graphic Log	USCS	Lithologic Description	Well Design	Elevation (feet)
						<p><b>Soil Group Name:</b> modifier, color, moisture, density/consistency, grain size, other descriptors</p> <p><b>Rock Description:</b> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.</p>		
105	<1	Core: 28 Core: 30	Photo: 1407			<Clay Continued>		4639
110	<1	Core: 31 Core: 32	Photo: 1408			105.0'-117.0' Minimal Cobbles <5%.		4634
115	<1	Core: 33 Core: 34	Photo: 1409			117.0' Increased cobble content >20%. Clasts are sedimentary (photo: 1410), igneous, and metamorphic in origin.		4629
120	<1	Core: 35 Core: 36	Photo: 1411		CL			4624
125	<1	Core: 37 Core: 38	Photo: 1412					4619
130	<1	Core: 39 Core: 40	Photo: 1413					4614
135	<1	Core: 41 Core: 42	Photo: 1413					4609
140	<1	Core: 43 Core: 46	Photo: 1413					4604
145	<1	Core: 47	Photo: 1413					4599
150	<1							4594



United States Environmental Protection Agency  
 TDD: 0008/1410-07 EPA- MW-05 Replacement  
 700 South 1600 East PCE Plume WO#: 20408.012.008.0189.00  
 500 Foothills Dr. Building 16 Salt Lake City, Utah

Boring ID: EPA-MW-05R  
 Start Date: September 23, 2016  
 End Date: September 25, 2016  
 Latitude: 40.755969°  
 Longitude: -111.83918°  
 Elevation: 4744

Geologist: Roy Weindorf	Groundwater Depth (feet bgs): 215	Groundwater Elevation: 4529
Drilling Contractor: Cascade Drilling	Total Depth (feet bgs): 230	Total Depth Elevation: 4514
Drilling Method: Sonic	Borehole Diameter (inches): 8	Borehole Completion: Well Installed

Depth (feet)	Organic Vapor Levels (ppm)	Sample ID (Blow Counts)	Sample Type	Graphic Log	USCS	Lithologic Description	Well Design	Elevation (feet)
155	<1	Core: 47 Core: 48	Photo: 1413	[Hatched]		<Clay Continued>		4589
160	<1	Core: 49 Core: 50	Photo: 1414	[Hatched]	CL	154.5'-195.0' Minimal Cobbles <5%.		4584
165	<1	Core: 51 Core: 52	Photo: 1415	[Hatched]				4579
170	<1	Core: 53 Core: 54	Photo: 1416	[Hatched]		172.0'-175.0' Rock stuck in bit. No cuttings returned.		4574
175	<1	Core: 55 Core: 56	Photo: 1417	[Hatched]		<Clay Continued. Minimal Cobbles.>		4569
180	<1	Core: 57 Core: 58	Photo: 1418	[Hatched]	CL			4564
185	<1	Core: 59 Core: 60		[Hatched]				4559
190	<1	Core: 61 Core: 62		[Hatched]				4554
195	<1	Core: 63		[Hatched]		195.0'-216.8' Clay: brown, dry, medium stiff, low plasticity, moderately cohesive, <10% coarse content (sand, gravel, and cobble).		4549
200	<1			[Hatched]			Well Design: 3/4 Inch Bentonite Chips (Hydrated In-Place), Schedule 80 - 4 Inch PVC Riser, Tremie Pipe Placed Bentonite Grout, Schedule 80 - 0.010 Inch Slot 4 Inch PVC Screen, 2/12 Silica Sand	4544



United States Environmental Protection Agency  
 TDD: 0008/1410-07 EPA- MW-05 Replacement  
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Boring ID: EPA-MW-05R  
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 Latitude: 40.755969°  
 Longitude: -111.83918°  
 Elevation: 4744

Geologist: Roy Weindorf  
 Drilling Contractor: Cascade Drilling  
 Drilling Method: Sonic  
 Groundwater Depth (feet bgs): 215  
 Total Depth (feet bgs): 230  
 Borehole Diameter (inches): 8  
 Groundwater Elevation: 4529  
 Total Depth Elevation: 4514  
 Borehole Completion: Well Installed

Depth (feet)	Organic Vapor Levels (ppm)	Sample ID (Blow Counts)	Sample Type	Graphic Log	USCS	Lithologic Description	Well Design	Elevation (feet)
						<p><b>Soil Group Name:</b> modifier, color, moisture, density/consistency, grain size, other descriptors</p> <p><b>Rock Description:</b> modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.</p>		
205	<1	Core: 64		Photo: 1419		<Clay Continued>		4539
		Core: 65						
210	<1	Core: 66		Photo: 1420				4534
		Core: 67						
215	<1	Core: 68			CL			4529
		Core: 69				<p>215.0' Becomes wet.</p> <p>216.8'-217.6' Sand: brown, wet, loose, coarse grained, moderately well sorted, sub angular (photo: 1421).</p> <p>217.6'-230.0' Clay: brown, wet, medium stiff, low plasticity, moderately cohesive, &lt;10% coarse content (sand, gravel, and cobble).</p>		4524
220								
225	<1			Photo: 1422				4519
230	<1						Slough	4514
235						END OF BORING	<p><b>Materials Used:</b></p> <p>Slotted PVC (10 foot): 3; PVC Riser (10 foot): 20; Sand (50 pound bag): 19; Bentonite Chips (50 pound bag): 3; Grout (50 pound</p>	4509
240								4504
245								4499
250								4494

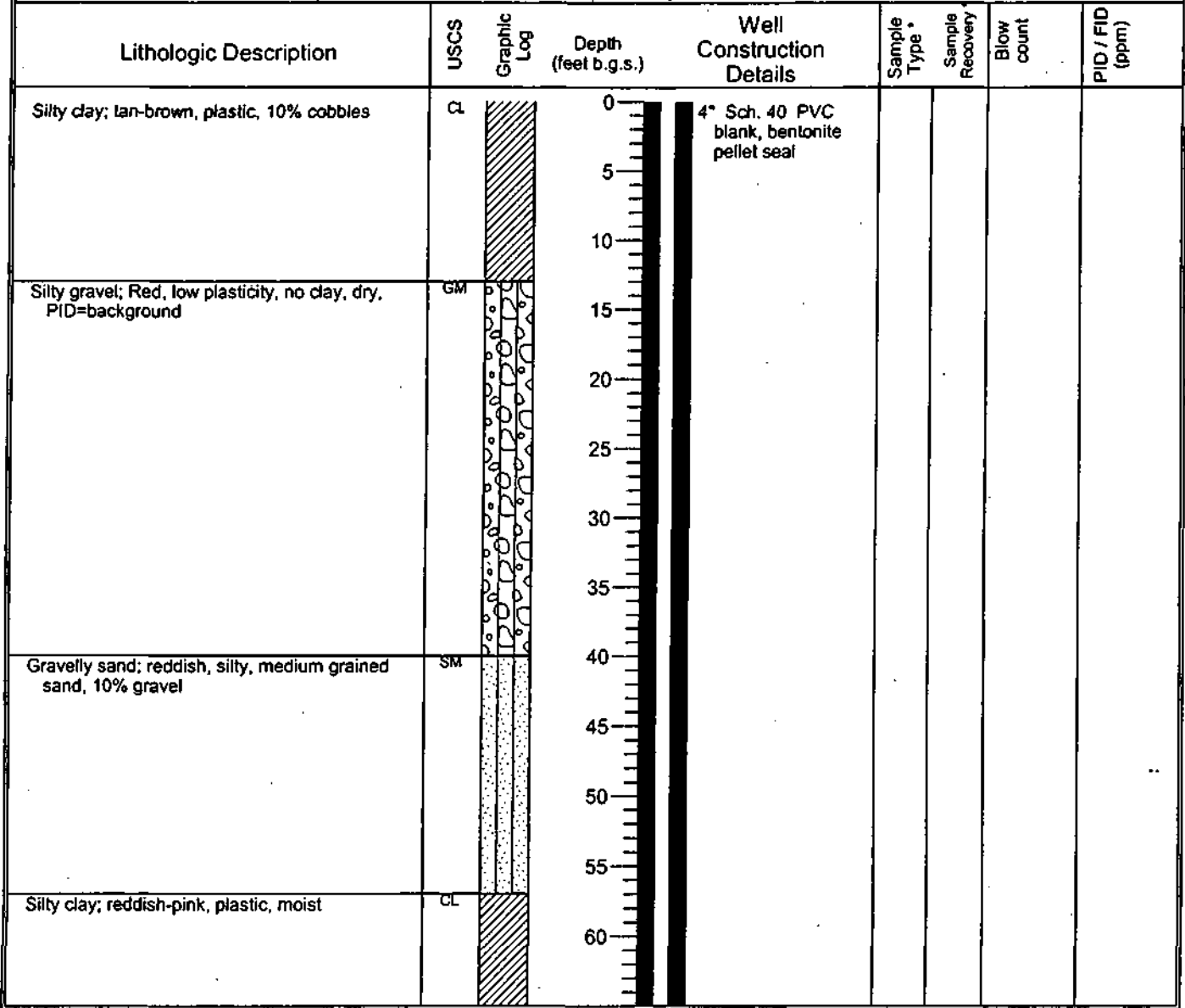




**URS Operating Services**

**SOIL BORING LOG / MONITORING WELL CONSTRUCTION DIAGRAM**

Boring / Well Number: <b>EPA-MW-06</b>		TDD Name/Project Number: <b>Mount Olivet 7580314.00</b>		Site Location: <b>Salt Lake City, Utah</b>	
Boring Depth (ft) X Diameter (in): <b>134.0 x 8</b>				Drilling Method: <b>Hammer Rig w/advance casing</b>	
Well Contractor Name: <b>Layne Christenson</b>			Logged by: <b>Mike Carmien</b>		
Ground Surface Elevation (ASL):		Top of Casing Elevation (ASL):		Lat. Long. <i>SE CORNER of Sunnyside Park</i>	Northing Easting
Date Started: <b>9/22/99</b>		Date Completed: <b>9/23/99</b>		Additional Comments: <b>Sunnyside Park north of tennis court</b>	



\* SS (split spoon) HSA (hollow stem auger) MC (Geoprobe macrocore) CT (cuttings)

Observations	Date:	9/23/99	1/6/00		
Static Water Level (from TOC)	Level:	▽ .118.21	▽ 121		
Static Water Level (ASL)	Level:				



**URS Operating Services**

**SOIL BORING LOG / MONITORING WELL CONSTRUCTION DIAGRAM**

Boring / Well Number: **EPA-MW-06**      TDD Name/Project Number: **Mount Olivet 7580314.00**      Site Location: **Salt Lake City, Utah**

Lithologic Description	USCS	Graphic Log	Depth (feet b.g.s.)	Well Construction Details	Sample Type	Sample Recovery	Blow count	PID / FID (ppm)
			65					
Gravelly silt; red, 30% gravel, dry	GM		70					
			75					
			80					
			85					
Silty sand; red	SM		90					
			95	10-20 mesh silica sand				
Sandy gravel; red, dry	GW		100	4" Sch. 40 slotted screen in 10-20 mesh sand				
			105					
Silty sand; red, dry	SM		110					
Silty sand; red, wet (water table @ 115 bgs)	SM		115					
			▽ 120					
Gravel/silt/clay; very resistant, slow drilling, well cemented, qtz, rhyolite, amphiboles, and feldspars	GM		125					
			130					

\* SS (split spoon) HSA (hollow stem auger) MC (Geoprobe macrocore) CT (cuttings)

Observations	Date:	9/23/99	1/6/00		
Static Water Level (from TOC)	Level:	▽ 118.21	▽ 121		
Static Water Level (ASL)	Level:				





# BORING/WELL CONSTRUCTION LOG

Project: ADU-1: East Side Spngs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620DT 2"  
 Driller: O. Waters  
 Boring Well ID: GW-02

Project Number: 6202899  
 Start Time/Date: 1427 2/24/16  
 Completion Time/Date: 1549 2/24/16  
 Final Depth: 40'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
ACETATE SLEEVE	NA	NA	NA	SM	1	0-5" topsoil, some wood fragments	[Cross-hatched area]
				CL	2	5'-1' silty sand, 7.5 YR 5/6 (strong brown), medium dense, dry, fine grained sand	
				SP	3	1'-2' clay, 10 YR 5/6 (yellowish brown), medium stiff, slightly plastic, dry, trace fine grained sand	
				CL	4	2'-5' poorly graded sand, 7.5 YR 5/4 (brown), loose, dry, very fine to fine grained sand (qtz)	
				SP	5	5'-5.5' sandy clay, 10 YR 5/6 (yellowish brown), medium dense, slightly plastic, dry, fine grained sand	
				SP	6	5.5'-10' poorly graded sand, 7.5 YR 5/6 (strong brown), loose, dry, fine grained sand (qtz)	
				SP	7		
				SP	8		
				SP	9		
				SP	10		
				SC	11	10'-11' clayey sand, 10 YR 5/6 (yellowish brown), medium dense, dry, very fine grained sand	
				SP	12	11'-16' poorly graded sand, 7.5 YR 5/6 (strong yellowish brown), loose, dry, fine grained quartz sand, <5% fines, silt lenses (1" thick) at 14' and 15.1'. Fining downwards at 15' to very fine grained sand	
				SP	13		
				SP	14		
				SP	15		
				SM	16	16'-16.5' silty sand	
				GC	17	16.5'-20' clayey gravel, 7.5 YR 4/6 (strong brown), medium dense, dry, fine to coarse grained sand (20%), gravel angular-subrounded (lithics, S.S. up to 3"), 15% clay (7.5 YR 4/6 strong brown)	
				GC	18		
				GC	19		
				GC	20		
				GC	21	20'-20.5' sandy clayey sand, 7.5 YR 4/6 (strong brown), medium dense, dry, fine grained sand, few gravel (subangular, lithics, up to 0.25"), wood fibers	
				GC	22		
				GC	23	20.5'-30' clayey gravel, 7.5 YR 4/4 (brown), loose, dry, angular to subrounded gravel (lithics, S.S. qtz, up to 2.5"), fine to coarse grained sand, 20% clay	
				GC	24		
				GC	25		
				GC	26		
				GC	27		
				GC	28		
				GC	29		
				GC	30		
				GC	31		
				GC	32		
				GC	33		
				GC	34		
				GC	35		
				GC	36	36" Refusal at 40' - No well set	
				GC	37		
				GC	38		
				GC	39		
				GC	40		

SS = Split Spoon, ST = Shelby Tube, CUT = Drill Cuttings, or Core



# BORING/WELL CONSTRUCTION LOG

Project: ADU1 East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: 6020 DT-Geoprobe 2"  
 Driller: O. Waters  
 Boring Well ID: GW-03

Project Number: 6202897  
 Start Time/Date: 1618 2/24/16  
 Completion Time/Date: 1745 2/24/16  
 Final Depth: 35'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details	
ACETATE SLEEVE	NA	NA	NA	SP	1	0-3" topsoil		
					2	3"-11" poorly graded sand, 7.5 YR 5/6 (strong brown), loose, moist,		
					3	Fine grained sand, 5% silt, trace gravel (lithics, subangular, up to .25"), tree roots		
					4			
					5			
					6			
					7	7' lamination of clay (7.5 YR 7/4 pink)		
					8			
					9			
					10			
					11	SP		11'-12' poorly graded sand, 7.5 YR 5/6 (strong brown), medium dense,
					12	SW		wet, very fine grained sand, 10% silt, qtz grains
					13	SP		12'-13' well graded sand, 7.0 YR 4/6 (dark yellowish brown), loose, dry,
					14	SP		Fine to coarse grained, qtz and lithics, <5% silt
					15	SP		13'-15' poorly graded sand, 7.5 YR 6/6 (reddish yellow), loose, dry, fine grained sand, quartz
					16	SP		15'-16.5' poorly graded sand, 7.5 YR 5/6 (strong brown), medium dense,
					17	SW		moist, very fine grained sand,
					18	SP		16.5'-17' well graded sand, 7.5 YR 4/4 (brown), loose, moist, Fine to coarse grained, lithics and quartz
					19	GC		17'-17.5' same as 15'-16.5'
					20	GC		17.5'-27' clayey gravel: 7.5 YR 4/6 (strong brown), medium dense, dry,
					21	GC		20% Fine to coarse grained sand, 15% clay (10 YR 6/14, light brown), angular to subrounded gravel (S.S., quartz, lithics)
					22	GC		
					23	GC		
					24	GC		moist at 24 feet
					25	GC		
					26	GC		
					27	GC		27'- <del>30'</del> <sup>KL</sup> same as above, color change to 7.5 YR 5/6 (strong brown)
					28	GC		33'
					29	GC		
					30	GC		
					31	GC		wet at 30'
					32	GC		
					33	GC		
					34	ML		33'-35' sandy silt, 5 YR 4/6 (yellowish red), medium stiff, slightly plastic,
					35	ML		wet, Fine grained sand
				<ul style="list-style-type: none"> <li>3/4" PVC Sch. 40</li> <li>PVC 10.0" well screen: 28-33</li> <li>Backfill: 0-26', <del>27'</del><sup>KL</sup> 33-35'</li> <li>Bentonite: 26-27'</li> <li>Sand: 27-33'</li> </ul>				

SS = Split Spoon, ST = Shelby Tube, CUT = Drill Cuttings, or Core



# BORING/WELL CONSTRUCTION LOG

Project: A04-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620 DT 2"  
 Driller: O. Waters  
 Boring Well ID: GW-04

Project Number: 6202899  
 Start Time/Date: 1014 2/26/16  
 Completion Time/Date: 1143 2/26/16  
 Final Depth: 25'  
 Logged By: K. Lazzari

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details		
ACETATE SLEEVE	NA	24/60	NA	ML	1	0-6" topsoil			
					2	6"-6' silt, 7.5 YR 2.5/1 (black), stiff, slightly plastic, moist, few fine grained sand			
								3	
								4	
								5	
								6	
				ML	7	6'-11' clayey silt, 7.5 YR 4/1 (dark gray), stiff, slightly plastic, moist, few fine-medium grained sand			
								8	
								9	
								10	
								11	
				CL	12	11'-14' sandy clay, 10 YR 5/4 (yellowish brown), soft, slightly plastic, moist, 15% fine to medium grained sand			
								13	
								14	
				CL	15	14'-15' sandy clay, 7.5 YR 4/6 (strong brown), medium stiff, nonplastic, moist, fine to medium grained sand, trace gravel (subrounded, lithics)			
				GC	16	15'-20' clayey gravel, 7.5 YR 4/6 (strong brown), medium dense, dry, fine to coarse grained sand, gravel angular-subangular lithics, s.s., limestone) up to 2.5", 15% clay			
								17	
								18	
								19	
								20	
SC	21	20'-25' clayey sand, 2.5 Y 6/4 (light yellowish brown), dense, wet, fine to medium grained sand							
			22						
			23						
			24						
			25						

3/4" Sch. 40 PVC  
 PVC 0.610" slot screen: 20-25'

Backfill: 0-18'  
 Bentonite: 18-19'  
 Sand: 19-25'

SS = Split Spoon, ST = Shelby Tube, CUT = Drill Cuttings, or Core





# BORING/WELL CONSTRUCTION LOG

Project: AOU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6020-DT  
 Driller: O. Waters  
 Boring Well ID: GW-05

Project Number: 6202899  
 Start Time/Date: 0921 2/25/16  
 Completion Time/Date: 1000 2/25/16  
 Final Depth: 15'  
 Logged By: K. Lazzari 2/25/16

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
ACETATE SLEEVE	31/60	NA	NA	SC	1	0-6" topsoil	
					2	6" - 6' silty sand, 10YR 5/4 (yellowish brown), medium dense, moist, clayey	
					3	moist, fine grained sand wet @ 3.5'	
	4	4' color change to 10YR 5/4 (yellowish brown)					
	5	6'-15' clayey sand, 7.5YR 5/6 (strong brown), medium dense, moist, fine to medium grained sand					
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
						<p>3/4" dia. Sch. 40 PVC</p> <p>3/4" PVC screen 0.010" slot: 3.5-8.5'</p> <p>Backfill: 0-1.5', 8.5-15'</p> <p>Bentonite: 1.5-2.5'</p> <p>Sand: 2.5-8.5'</p>	

SS = Split Spoon, ST = Shelby Tube, CUT = Drill Cuttings, or Core



# BORING/WELL CONSTRUCTION LOG

Project: A04-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620DT 2"  
 Driller: D. Waters  
 Boring Well ID: GW-06

Project Number: 6202899  
 Start Time/Date: 2/25/16 1050  
 Completion Time/Date: 1130 2/25/16  
 Final Depth: 10'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
ACETATE SLEEVE	NA	31/60	NA	SC	1	0-5" topsoil	
					2	5"-6' clayey sand, 10YR 6/2 (light brownish gray), medium dense, moist, fine grained sand	
					3		
					4	3.5' - color change to 10YR 5/4 (yellowish brown)	
					5		
			6	SC	6	6'-10' clayey sand, 7.5YR 5/6 (strong brown), medium dense, wet, fine to medium grained	
			49/60		7		
				8			
				9			
				10			
					3/4" dia. Sch. 40 PVC PVC 0.010" slot screen: 5-10'		
					Backfill: 0-3'		
					Bentonite: 3-4'		
					Sand: 4-10'		

SS = Split Spoon, ST = Shelby Tube, CUT = Drill Cuttings, or Core



# BORING/WELL CONSTRUCTION LOG

Project: AOU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe W620-DT  
 Driller: A Waters  
 Boring Well ID: GW-07

Project Number: W202899  
 Start Time/Date: 1329 2/25/16  
 Completion Time/Date: 1407 2/25/16  
 Final Depth: 10'  
 Logged By: K. Lutzen

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
ACETATE SLEEVE	NA	4/60	NA	SP	1	0-6" topsoil	
					2	6"-3.5', poorly graded sand, 10%R w/3 (pale brown), dense, moist, fine grained sand.	
					3		
				SC	4	3.5'-6.5' clayey sand, 2.5 Y w/4 (light yellowish brown), dense, wet, fine grained sand, 15% clay	
					5		
				CL	6		
					7	6.5'-7' clay, 2.5 Y w/4 (light yellowish brown), soft, plastic, wet, trace fine grained sand	
					8	7'-10' sandy clay, 7.5 YR 5/6 (strong brown), medium stiff, slightly plastic, wet, fine grained sand	
				CL	9		
					10		
					3/4" diameter Schedule 40 PVC 3/4" PVC screen 0.010" slot: 4'-9"  Backfill: 0-2', 9-10' Bentonite: 2-3' Sand: 3-9'		

SS = Split Spoon, ST = Shelby Tube, CUT = Drill Cuttings, or Core



# BORING/WELL CONSTRUCTION LOG

Project: AOU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620 DT 2"  
 Driller: O. Waters  
 Boring Well ID: GW-08

Project Number: 6202899  
 Start Time/Date: 1231 2/27/16  
 Completion Time/Date: 1305 2/27/16  
 Final Depth: 15'  
 Logged By: K. Lazzeri

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
ACETATE SLEEVE	NA	21/60	NA	ML	1	0-4" topsoil	
					2	4"-5' sandy silt, 10 YR 3/3 (dark brown), medium stiff, nonplastic, dry, fine grained sand	
					3		
					4		
					5		
		41/60	NA	SC	6	5'-11' clayey sand, 7.5 YR 5/4 (brown), medium dense, moist, fine grained sand	
				7			
				8			
				9			
				10			
		60/60		SP	11	11'-15' poorly graded sand, 7.5 YR 5/2 (brown), medium dense, wet, fine grained sand, 10% fines	
				12			
				13			
				14			
				15			
						<ul style="list-style-type: none"> <li>3/4" dia. Sch. 40 PVC</li> <li>PVC 0.010" slot screen: 10-15'</li> <li>Backfill: 0-8'</li> <li>Bentonite: 8-9'</li> <li>sand: 9-15'</li> </ul>	

SS = Split Spoon, ST = Shelby Tube, CUT = Drill Cuttings, or Core



# BORING/WELL CONSTRUCTION LOG

Project: AOU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Cjcoprobe 6620-DT 2"  
 Driller: Cascade-K O. Waters  
 Boring/Well ID: GW-09

Project Number: 6202899  
 Start Time/Date: 0855 2/20/16  
 Completion Time/Date: 0925 2/20/16  
 Final Depth: 10'  
 Logged By: K. Luzzetti

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
ACETATE SLEEVE	NA	40/60	NA	ML	1	0-5" topsoil	
					2	5'-4' silt, 7.5 YR 2.5/1 (black), stiff, slightly plastic, moist, trace fine grained sand	
					3		
					4		
				CL	5	4'-6.5' sandy clay, GLEY 1 0/10Y (greenish gray), medium stiff, plastic, moist, fine grained sand	
					6		
				SC	7	6.5'-8' clayey sand, GLEY 1 0/10Y (greenish gray), <del>medium</del> medium dense	
					8		
				CL	9	8'-10' clay, 2.5Y 6/4 (light yellowish brown), soft, plastic, wet, trace fine grained sand	
					10		
						<p>3/4" dia. Sch. 40 PVC</p> <p>3/4" PVC screen: 0.010" slot: 5-10'</p> <p>Backfill: 0-3'</p> <p>Bentonite: 3-4'</p> <p>Sand: 4-10'</p>	

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# BORING/WELL CONSTRUCTION LOG

Project: AOU - 1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620DT 2"  
 Driller: O. Waters  
 Boring Well ID: GW-10

Project Number: 6202899  
 Start Time/Date: 1354 ~~167~~ <sup>KL</sup> 2/26/16  
 Completion Time/Date: 1458 2/26/16  
 Final Depth: 20'  
 Logged By: K. Lazzari

Sample Type	Blow Counts/6"	Sample Interval - Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
ACETATE SLEEVE	NA	26/60	NA	ML	1	0'-6" <del>stiff</del> <sup>KL</sup> top soil	
				CH	2	6"-1.5' silt, 10YR 3/3 (dark brown), medium stiff, nonplastic, dry, few fine grained sand	
					3	1.5'-6' clay, 2.5Y 7/2 (light gray) with 10YR 6/6 (brownish yellow) mottling, medium stiff, plastic, moist	
					4		
					5		
					6		
				CL	7	6'-11' sandy clay, 2.5Y 7/2 (light gray) with 10YR 6/6 (brownish yellow) mottling, medium stiff, moist, very fine grained sand, trace gravel (subangular to subrounded, up to 0.25"), slightly plastic	
					8		
					9		
					10		
				CL	11	11'-13' sandy clay, 4.0YR 6/6 (brownish yellow), medium dense, slightly plastic, very fine grained sand	
					12		
				SC	13	13'-15' clayey sand, 7.5YR 6/6 (reddish yellow), medium dense, moist, fine grained sand	
					14		
					15		
				SW	16	16'-18' well graded sand, 7.5YR 6/6 (reddish yellow), loose, wet, fine to coarse grained sand	
					17		
				CL	18	18'- <del>20'</del> <sup>14</sup> clay, 2.5Y 6/4 (light yellowish brown), <del>soft</del> <sup>stiff</sup> <sup>KL</sup> , plastic, slightly plastic, moist	
				GC	19		
					20		
					19'-20' clayey gravel, 7.5YR 4/6 (strong brown), medium dense, dry, fine to coarse grained sand, gravel to angular-subangular (lithics, S-S), up to 3", 15% clay		
					3/4" Sch. 40 PVC PVC 0.010" slot screen: 13-18'		
					Backfill: 0-11', 18-20' Bentonite: 11-12' Sand: 12-18'		
					Well completed with monitoring well manhole and concrete apron		

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# BORING/WELL CONSTRUCTION LOG

Project: A04-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6020 DT 2"  
 Driller: O. Waters  
 Boring Well ID: GW-11

Project Number: 6202899  
 Start Time/Date: 1450 2/25/16  
 Completion Time/Date: 1552 2/25/16  
 Final Depth: 15'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
ACETATE SLEEVE	NA	0/60	NA	SC	1	0-6" topsoil	
					2	6"-5' No Recovery	
					3		
					4		
					5	clayey sand <sup>KL</sup>	
					6	5'-10' sandy clay, <del>CLAY</del> <sup>CLAY</sup> slot (greenish gray), medium stiff, <sup>KL</sup> slightly plastic, moist, fine grained sand, root fibers	
					7		
					8		
					9		
					10	10-15' <sup>KL</sup>	
					11	<del>10-15'</del> sandy clay, 2.5Y 5/2 (grayish brown), medium stiff, slightly plastic, wet, fine to medium grained sand	
					12		
					13		
					14		
					15		
						<p>3/4" Sch. 40 PVC          PVC 0.010" slot screen: 10-15'</p> <p>Backfill: 0-8'          Bentonite: 8-9'          Sand: 9-15'</p> <p>well completed with monitoring well manhole and concrete apron</p>	

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# BORING/WELL CONSTRUCTION LOG

Project: A04-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620DT 2"  
 Driller: O. Waters  
 Boring Well ID: GW-12

Project Number: 6202899  
 Start Time/Date: 1028 3/1/16  
 Completion Time/Date: 1054 3/1/16  
 Final Depth: 15'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other)	Boring and/or Well Details
ACETATE SLEEVE	NA	31/60	NA	CL	1	0-6" topsoil, roots, glass fragments	
				CL	2	6"-4" clay 10 YR 6/3 (pale brown), medium stiff, moist, plastic	
				CL	3		
				CL	4		
				CL	5	4'-9" sandy clay, mottled 4LE4 1 6/104 (greenish gray) and 5Y 6/3 (pale olive), medium stiff, plastic, moist, Fine grained sand	
				CL	6		
				CL	7		
				CL	8		
				CL	9		
				CL	10	9'-10' sandy clay, 10 YR 6/4 (light yellowish brown), medium stiff, slightly plastic, wet, Fine to medium grained sand	
						3 1/4" dia. Sch. 40 PVC PVC 0.010" slot screen: 5-10'  Backfill: 0-3' Bentonite: 3-4' Sand: 4-10'	

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# BORING/WELL CONSTRUCTION LOG

Project: BOU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620 DT 2"  
 Driller: O. Waters  
 Boring/Well ID: GW-13

Project Number: 6202899  
 Start Time/Date: 0801 3/4/16  
 Completion Time/Date: 0856 3/4/16  
 Final Depth: 25'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval - Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
ACETATE SLEEVE	NA	43/60	NA	ML	1	0-4" topsoil	
					2	4"-6' sandy silt, 7.5 YR 4/2 (brown), stiff, nonplastic, dry, 30% sand (fine to medium grained), 10% gravel (subangular-subrounded, lithic, up to 0.5")	
					3		
					4		
					5		
					6		
					7		
					8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		
					21		
					22		
					23		
					24		
					25		
						<p>20'-24' poorly graded sand, 7.5 YR 6/6 (reddish yellow), loose, wet, fine grained sand</p> <p>13.5'-20' clayey sand, 7.5 YR 5/4 (brown), dense, moist, fine grained sand</p> <p>6'-13.5' clay, mottled 7.5 YR 3/2 (dark brown) and 7.5 YR 7/4 (pink), medium stiff, plastic, moist</p>	
						<p>24'-25' well graded sand, 7.5 YR 4/4 (brown), loose, wet, fine to coarse grained, subangular to rounded gravel (20%, lithic, up to 0.5"), qtz and lithic grains</p>	
						<p>3/4" PVC Sch. 40          PVC 0.010" slot screen: 20-25'</p>	
						<p>Backfill: 0-18'          Bentonite: 18-19'          Sand: 19-25'</p>	

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# BORING/WELL CONSTRUCTION LOG

Project: AOU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe G620BT 2"  
 Driller: O. Walters  
 Boring Well ID: GW-14

Project Number: 6202899  
 Start Time/Date: 0800 3/2/16  
 Completion Time/Date: 0830 3/2/16  
 Final Depth: 20'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
ACETATE SLEEVE NA	NA	NA	NA	ML	1	0-3" topsoil	
					2	3"-3' sandy silt, 7.5 YR 7/2 (dark brown), medium stiff, nonplastic, dry, fine to coarse grained sand, 15% gravel (angular to subrounded, lithics & qtz, up to 1")	
					3		
				CL	4	3'-6' clay, 2.5 Y 7/2 (light gray), stiff, plastic, dry, trace rounded gravel up to 0.5"	
					5		
				CH	6	6'-15.5' <sup>CL</sup> sandy clay, mottled 10YR 7/2 (light gray) and 10YR 5/6 (yellowish brown), medium dense, nonplastic, wet	
					7		
					8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		
				SC	16	15.5'-20' clayey sand, 7.5 YR 5/6 (strong brown), soft, slightly plastic, wet, fine grained sand	
					17		
					18		
					19		
					20		
						3/4" PVC (Sch. 40) PVC 0.010" slot screen: 15-20'  Backfill: 0-13' Bentonite: 13-14' Sand: 14-20'	

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# BORING/WELL CONSTRUCTION LOG

Project: AOU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig Bit: ~~Geoprobe 6020 BT~~ Hand Augered 2"  
 Driller: O. Waters  
 Boring Well ID: GW-15

Project Number: 6202899  
 Start Time/Date: 1411 2/27/16  
 Completion Time/Date: 1440 2/27/16  
 Final Depth: 5'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
HAND AUGER	NA	NA	NA	ML	1	0-3" topsoil	
					2	3"-4' sandy silt, 7.5 YR 2.5/1 (black), medium stiff, nonplastic, wet, fine to medium grained	
					3		
					4		
				SC	5	4'-5' clayey sand, 5R 4KL 10YR 5/2 (grayish brown), medium dense, wet, fine grained sand, 15% fines	
						3/4" PVC Sch. 40 PVC 0.010" slotted screen: 0-5'	
						Backfill: 0-0.5' * Bentonite: 0.5'-1' * Sand: 1-5'	
						*Bentonite and backfill in part of screen in order to prevent spring from popping up	

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# BORING/WELL CONSTRUCTION LOG

Project: AOU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620DT 2"  
 Driller: O. Waters  
 Boring/Well ID: GW-17

Project Number: 6202879  
 Start Time/Date: 0925 3/1/16  
 Completion Time/Date: 0956 3/1/16  
 Final Depth: 15'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval <i>Recovery</i>	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description <small>(Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)</small>	Boring and/or Well Details
ACETATE SLEEVE	NA	3 1/60	NA	SC	1 0'-4" topsoil		
					2 4"-4' clayey sand, 7.5 YR 6/4 (light brown), medium stiff, moist, slightly plastic		
					3		
					4		4'-12' poorly graded sand, 5YR 5/4 (reddish brown), medium dense, moist, fine grained sand
					5		
					6		
		45/60		SP	7		
					8		
					9		
					10		
					11		
		54/60		CL	12 12'-15' sandy clay, 5 YR 5/4 (reddish brown), medium stiff, slightly plastic, wet, fine to medium grained sand		
					13		
					14		
					15		
					3 1/4" PVC Sch. 40		
					PVC 0.010" slot screen: 10-15'		
					Backfill: 0-8'		
					Bentonite: 8-9'		
					Scind: 9-15'		

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# BORING/WELL CONSTRUCTION LOG

Project: A01-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprac 6620ST 2"  
 Driller: C. Walters  
 Boring Well ID: GW-18

Project Number: 6202899  
 Start Time/Date: 0834 3/1/16  
 Completion Time/Date: 0901 3/1/16  
 Final Depth: 10'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
ACETATE SLEEVE	NA	30/60	NA	CL	1	0-4" topsoil	
					2	4"-7' sandy clay, 10YR 4/4 (light yellowish brown), medium stiff, moist, slightly plastic, fine grained sand	
					3		
					4		
					5		
		6					
		7					
		8	7'-10' clayey gravel, 7.5 YR 4/6 (strong brown), medium dense, <del>not</del> wet, fine to coarse grained sand, gravel angular - subangular, up to 2.5", 10% clay				
		9					
		10					
						3/4" PVC Sch. 40 PVC 0.010" slot screen: 5-10'  Backfill: 0-3' Bentonite: 3-4' Sand: 4-10'	

SS = Split Spoon, ST = Shelby Tube, CUT = Drill Cuttings, or Core





# BORING/WELL CONSTRUCTION LOG

Project: *Act-1 : East side Springs*  
 Drilling Company: *Cascade Drilling*  
 Drilling Rig/Bit: *Geo probe G600DT 2"*  
 Driller: *C. Waters*  
 Boring/Well ID: *GW-14*

Project Number: *6202894*  
 Start Time/Date: *1522 2/29/16*  
 Completion Time/Date: *1631 2/29/16*  
 Final Depth: *30'*  
 Logged By: *K. Lazen*

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details				
ACETATE SLEEVE	NA	45/100	NA	ML	1	0-6" topsoil					
				CL	2	6"-2' silt, 7.5 YR 4/2 (brown), medium stiff, nonplastic, dry, 15% sand (fine to medium grained)					
				CL	3	2'-7' sandy clay, med-fine 10 YR 7/2 (light gray) and 10 YR 5/6 (yellowish brown), medium stiff, slightly plastic, moist, fine grained sand					
				SC	7	7'-9' clayey sand, med-fine 10 YR 7/2 (light gray) and 10 YR 5/6 (yellowish brown), medium dense, moist, fine grained sand					
				SW	10	9'-10' well graded sand, 7.5 YR 4/6 (strong brown), loose, moist, fine to coarse grained					
				SP	11	10'-12' poorly graded sand, 5 YR 4/4 (reddish brown), medium dense, moist, fine grained sand					
				CL	12	12'-23' sandy clay, 7.5 YR 5/6 (strong brown), medium stiff, slightly plastic, moist					
				SC	23	23'-27' clayey sand, 5 YR 4/4 (reddish brown), medium dense, dry, fine grained sand					
				GC	27	27'-30' clayey gravel, 7.5 YR 4/4 (brown), loose, dry, angular to subrounded, gravel (lithics up to 2"), fine to coarse grained sand, 20% clay					
				3/4" PVC Sch. 40 PVC 0.010" slot screen: 7-12'							
				Backfill: 0-5'; 12-30'							
				Bentonite: 5-6'							
				Sand: 6-12'							

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# BORING/WELL CONSTRUCTION LOG

Project: AOU-1 - East side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620DT 2"  
 Driller: O. Waters  
 Boring Well ID: GW-20

Project Number: 6202899  
 Start Time/Date: 1351 2/29/16  
 Completion Time/Date: 1430 2/29/16  
 Final Depth: 20'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details	
ACETATE SLEEVE	NA	25/60	NA	ML	1	0-3" topsoil		
					2	3"-6' sandy silt, 10 YR 3/3 (dark brown), medium stiff, slightly plastic, moist, few gravel (subrounded to rounded, quartz and lithics, up to 0.3"), fine to medium grained sand.		
					3			
					4			
					5			
			30/60	NA	-CL-	6	6'-6.5' clay, 5Y 7/2 (light gray), stiff, plastic, dry, trace fine grained sand	
		CL			7			
					8	6.5'-9' sandy clay, 7.5 YR 4/6 (strong brown), lamination of clay above, stiff, plastic, slightly plastic, 10% fine to medium grained sand, 5% subangular-subrounded gravel (lithics, up to 0.25")		
					9			
					10			
			22/60	NA	CL	11	9'-12' sandy clay, 7.5 YR 2.5/1 (black), stiff, plastic, moist, trace angular to subrounded gravel (lithics, up to 0.25")	
					12			
					13	12'-17' clayey gravel, 5YR 5/4 (reddish brown), loose, wet, fine to coarse grained sand, angular to subangular gravel (lithics, up to 2")		
					14			
					15			
			60/60	NA	CL	17	17'-20' clay 5Y 8/1 (white) mottled with 5Y 7/6 (yellow), stiff, plastic, moist	
					18			
					19			
					20			
					3/4" PVC Sch. 40 PVC 0.010" slot screen: 11.5-16.5'			
					Backfill: 0-9.5'; 16.5-20' Bentonite: 9.5-10.5' Sand: 10.5-16.5'			
					Well completed with monitoring well manhole and concrete apron			

SS = Split Spoon, ST = Shelby Tube, CUT = Drill Cuttings, or Core



# BORING/WELL CONSTRUCTION LOG

Project: AOU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe W20DT 2"  
 Driller: O. Waters  
 Boring Well ID: GW-21

Project Number: 6202674  
 Start Time/Date: 0835 2/29/16  
 Completion Time/Date: 0940 2/29/16  
 Final Depth: 20'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other)	Boring and/or Well Details
Acetate Sleeve	NA	50/60	NA	GW	1	0-6" topsoil	
				CL	2	6"-1" sandy gravel, 10YR 6/4 (light yellowish brown), loose, dry, gravel subangular to rounded (lithics, up to 2"), fine to coarse grained sand, 10% clay	
				CL	3	1'-6" sandy clay, 7.5YR 4/6 (strong brown), dry, stiff, slightly plastic, fine to coarse grained sand (25%), trace gravel up to 0.1" (rounded)	
				CL	4		
				CL	5		
				CL	6	very tough drilling starting around 4'	
				CL	7	6'-13" sandy clay, 5YR 4/6 (yellowish red), medium stiff, slightly plastic, dry, fine grained sand (35%)	
				CL	8	moist at 12'	
				CL	9		
				CL	10		
				CL	11		
				CL	12		
				CL	13		
				CL	14	13'-20" clayey sand, 5YR 4/6 (yellowish red), medium dense, wet, fine grained sand	
				CL	15		
				SC	16		
				SC	17		
				SC	18		
				SC	19	18'- trace gravel (subangular, lithics, up to 0.5")	
				SC	20		
						3/4" PVC Sch. 40 PVC 0.010" slot screen: 12-17' Backfill: 0-10'; 17-20' Bentonite: 10-11' Sand: 11-17'	

SS = Split Spoon, ST = Shelby Tube, CUT = Drill Cuttings, or Core



# BORING/WELL CONSTRUCTION LOG

Project: AOU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620BT 2"  
 Driller: O. Waters  
 Boring/Well ID: GW-22

Project Number: 6202894  
 Start Time/Date: 1025 2/29/16  
 Completion Time/Date: 1101 2/29/16  
 Final Depth: 15'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other)	Boring and/or Well Details
ACETATE SLEEVE	NA	0/60	NA	SE CL	1	0-6" topsoil	
					2	6"-5' <del>se</del> no recovery - too rocky	
					3		
					4		
					5		
		6	5'-8' clayey sand-CL sandy clay, 5YR 4/6 (yellowish red), medium stiff, slightly plastic, moist, fine grained sand				
		7					
		8	8'-13' clayey gravel, 5YR 5/4 (reddish brown), loose, moist, fine to coarse grained sand, angular to subangular gravel (lithics, up to 3")				
		9					
		10					
		11					
		12					
		13	13'-15' clayey sand, 5YR 4/6 (yellowish red), medium dense, wet, fine grained sand				
		14					
		15					
						3/4" PVC Sch. 40 PVC 0.010" slot screen: 10-15'	
						Backfill: 0-8' Bentonite: 8-9' Sand: 9-15'	

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# BORING/WELL CONSTRUCTION LOG

Project: ADU-1: East Side Springs  
 Drilling Company: Calceae Drilling  
 Drilling Rig/Bit: Geoproc - 6620 DT 2"  
 Driller: O. Waters  
 Boring Well ID: GW-24

Project Number: 6202899  
 Start Time/Date: 1111 2/23/16  
 Completion Time/Date: 1223 2/23/16  
 Final Depth: 20'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval - KL Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
ACETATE SLEEVE	NA	NA	NA	CL	1	0-4" topsoil	
					2	4"-7' silty clay: 10 YR 3/3 (dark brown), medium stiff, slightly plastic, moist, fines, trace subangular gravel up to 1/8" (S.S)	
					3		
					4		
					5		
					6		
					7		
				ML	8	7'-11' sandy silt: 10 YR 7/3 (very pale brown), soft, slightly plastic, moist, very fine grained sand, few gravel up to 1/8" (subangular, lithics).	
					9		
					10		
				CL	11	11'-13' clay, GLEY 1 5/10Y (greenish gray), stiff, plastic, moist, trace gravel up to 1" (subangular, S.S)	
					12		
					13	13'-20' clay, 10 YR 3/3 (dark brown), stiff, plastic, moist	
				CL	14	not at 13.5'	
					15		
					16		
					17		
					18	few ice <del>not</del> very coarse grained sand	
					19		
					20		
						3/4" PVC Sch. 40	
						PVC 1/10" Slot screen: 13-18	
						backfill: 0-11', 18-20'	
						bentonite: 11-12'	
						sand: 12-18'	

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# BORING/WELL CONSTRUCTION LOG

Project: AOU-1: East Side Sprncys  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620 DT 2"  
 Driller: O. Waters  
 Boring Well ID: GW-25

Project Number: 6202899  
 Start Time/Date: 1115 2/29/16  
 Completion Time Date: 1230 2/29/16  
 Final Depth: 30'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details					
ACETATE SLEEVE	NA	NA	NA	ML	1	0-5" topsoil						
					2	5"-5' silt, 7.5 YR 2.5/3 (very dark brown), soft, nonplastic, dry, 15% fine grained sand						
					3							
					4							
					5							
				CL	6	5'-9' sandy clay, 7.5 YR 4/6 (strong brown), medium stiff, slightly plastic, dry, fine to medium grained sand						
					7							
					8	8' moist						
					9							
					10	9'-15' clayey gravel, 7.5 YR 4/4 (brown), loose, dry, angular to subangular gravel (lithics, SS, up to 2"), fine to coarse grained sand, 15% clay (2.5 Y 7/2 light gray)						
				GC	11							
					12							
					13							
					14							
					15							
				CH	16	15'-19' sandy clay, 7.5 YR 4/6 (strong brown), soft, plastic, moist, fine to medium grained sand						
					17							
					18							
					19							
					20	19'-21' clayey gravel, 7.5 YR 4/4 (brown), loose, dry, angular to subrounded gravel (lithics, S.S. up to 3"), fine to medium grained sand, 25% clay						
				CH	21							
					22	21'-30' sandy clay, 5 YR 4/6 (yellowish red), soft, plastic, wet, fine grained sand, lenses of clay sand (5" thick)						
					23							
					24							
					25							
										26		
										27		
										28		
										29		
										30		
						3/4" dia. Sch 40 PVC 3/4" PVC screen 0.010" slot: 25-30'						
						Backfill: 0-23'						
						Bentonite: 23-24'						
						Sand: 24-30'						

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# BORING/WELL CONSTRUCTION LOG

Project: A04-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620DT 2"  
 Driller: O. Waters  
 Boring Well ID: GW-26

Project Number: 6202899  
 Start Time/Date: 1533 2/26/16  
 Completion Time/Date: 1621 2/26/16  
 Final Depth: 20'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details	
ACETATE SLEEVE	NA	25/60	NA	GC	1	0-4" topsoil		
					2	4"-4.5' clayey gravel, clay 10YR 7/3 (very pale brown), loose, moist, 25% sand (fine - coarse grained), 15% fines, 60% gravel (angular to subrounded, lithics, up to 1.5")		
					3			
					4			
					5	4.5'-13' clay, 2.5Y 7/2 (light gray) with 10YR 6/6 (brownish yellow) mottling, medium stiff, moist, plastic		
					6			
					7			
					8			
					9			
					10			
					11			
					12			
					13			
					14			13'-15' poorly graded sand, 7.5YR 5/6 (strong brown), lamination of clay (7.5YR 5/4 brown), medium dense, moist, fine grained
					15			
					16			15'-17' well graded sand, 7.5YR 5/6 (strong brown), medium dense, moist, fine grained sand to coarse grained
					17			
					18			17'-18' clay, 7.5YR 6/4 (light brown), medium stiff, plastic, moist
					19			18'-18.5' clayey sand, 7.5YR 6/4 (light brown), medium dense, moist, fine grained sand
					20			18.5'-20' clayey gravel, 7.5YR 4/4 (brown), loose, dry, angular to subrounded gravel (lithics, S.S. up to 3"), fine to medium grained sand, 25% clay
						3/4" PVC Sch. 40 PVC 0.010" slot screen: 15-20'		
						Backfill: 0-13' Bentonite: 13-14' Sand: 14-20'		

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# BORING/WELL CONSTRUCTION LOG

Project: ADU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620DT 2"  
 Driller: O. Waters  
 Boring Well ID: GW-27

Project Number: 6202899  
 Start Time/Date: 0919 3/4/16  
 Completion Time/Date: 1022 3/4/16  
 Final Depth: 30'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details	
ACETATE SLEEVE	NA	21/60	NA	ML	1	0-4" topsoil		
					2	4"-5' sandy silt, 7.5 YR 4/2 (brown), stiff, nonplastic, dry, 30% sand (fine-medium grained), 15% gravel (subrounded, lithics, up to 0.5")		
					3			
					4			
					5			
				57/60	SP	6		5-12' poorly graded sand, 10 YR 5/6 (yellowish brown), medium dense, dry, fine grained, qtz grains
					7			
					8			
					9			
					10			
				46/60	CL	12		12'-13.5' sandy clay, 10 YR 5/6 (yellowish brown), medium stiff, slightly plastic, moist, fine grained sand
					13			
					14	13.5-17' clayey gravel, 7.5 YR 4/6 (strong brown), medium dense, dry, fine to coarse grained, gravel angular to subrounded (lithics, up to 3")		
					15			
					16			
				58/60	CH	17		17'-18' clay, 7.5 YR 4/6 (strong brown), medium stiff, plastic, moist, trace sand (fine to medium grained)
					18			
					19	18'-23' sandy clay, 5 YR 6/4 (light reddish brown), medium stiff, nonplastic, moist, 15% sand (fine to medium grained sand)		
					20			
					21			
				49/60	GC	23		23'-30' clayey gravel, 7.5 YR 4/6 (strong brown), medium dense, wet, fine to medium grained, angular to subangular gravel (lithics, 2.5")
						24		
						25		
						26		
						27		
				50/60		28		
						29		
						30		
					3/4" PVC Sch. 40 PVC 0.010" slot screen: <del>30-35</del> 25-30' Backfill: 0-23' Bentonite: 23-24' Sand: 24-30'			

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# BORING/WELL CONSTRUCTION LOG

Project: A04-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620 DT 2"  
 Driller: O. Waters  
 Boring Well ID: GW-28

Project Number: 6202899  
 Start Time/Date: 1101 3/4/16  
 Completion Time/Date: 1145 3/4/16  
 Final Depth: 25'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
					1 <sup>KL</sup>	No lithology logged	
					2 <sup>KL</sup>		
					3 <sup>KL</sup>		
					4 <sup>KL</sup>		
					5	3/4" PVC Sch. 40	
					6	PVC 0.010" slot screen: 20-25'	
					7		
					8	Backfill: <del>0-13</del> KL 0-18'	
					9	Bentonite: <del>13-14</del> KL 18-19'	
					10	Sand: <del>14-20</del> KL 19-25'	
					11		
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		
					21		
					22		
					23		
					24		
					25		

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# BORING/WELL CONSTRUCTION LOG

Project: A04-1 - East side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprac WRCO-DT 2"  
 Driller: O. Waters  
 Boring Well ID: GW-31

Project Number: W202899  
 Start Time/Date: 0917 2/27/16  
 Completion Time Date: 1130 2/27/16  
 Final Depth: 35'  
 Logged By: K. Lazzen

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details	
ACETATE SLEEVE	NA	NA	NA	ML	1	0-5" topsoil		
				ML	2	5"-4' sandy silt, 7.5 YR 4/2 (brown), medium stiff, slightly plastic, moist, fine to medium grained sand, trace gravel up to 0.5" (subangular - subrounded)		
				ML	3			
				CL	4	4'-7.5' sandy clay, 7.5 YR 5/4 (brown), soft, plastic, moist, 20% sand, fine grained sand		
				CL	5			
				CL	6			
				CL	7			
				CL	8	7.5'-15' clay, 7.5 YR 7/4 (pink) mottled with 7.5 YR 7/8 (reddish yellow), very stiff, plastic, dry		
				CL	9			
				CL	10			
				CL	11			
				CL	12			
				CL	13			
				CL	14			
				CH	15	25' 30-26'		
				CH	16			15'-17.5' sandy clay, mottled 2.5 Y 7/4 (pale yellow) and 7.5 YR 6/8 (reddish yellow), stiff, dry, plastic, very fine grained sand
				CH	17			
				CH	18			17.5' same as above, medium stiff, moist
				CH	19			
				CH	20			
				CH	21			
				CH	22			
				CH	23			
				CH	24			
				CH	25			
				CH	26			25'-29' clay, GLEY 1 5/10Y (greenish gray), medium stiff, plastic, moist
				CH	27			
				CH	28			
				SC	29			
				SN	30			29'-29.5' clayey sand, mottled 10 YR 7/3 (very pale brown) and 10 YR 5/6 (yellowish brown), medium dense, moist, fine grained sand
				SC	31			29.5'-30' well graded sand, 10 YR 5/4 (dark yellowish brown), loose, moist, fine to coarse grained, few gravel (subangular - subrounded, up to 0.5", lithics), 15% silt
				SC	32			
				CL	33			30'-33' clayey sand, 7.5 YR 5/6 (strong brown), loose, wet, fine to coarse grained sand, trace gravel up to 0.25"
				CL	34			33'-35' sandy clay, 5 YR 5/4 (reddish brown), medium stiff, wet, slightly plastic, fine grained sand
				CL	35			
<p>3/4" PVC Sch. 40          PVC 0 Dia" slot well screen: 30-35'          Backfill: 0-28'          Bentonite: 28-29'          Sand: 29-35'</p>								

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# BORING/WELL CONSTRUCTION LOG

Project: ADU-1: East side Springs  
 Drilling Company: Casco  
 Drilling Rig/Bit: Geoprobe W620DT 2"  
 Driller: D. Waters  
 Boring Well ID: GW-33

Project Number: 6202899  
 Start Time/Date: 0839 2/23/16  
 Completion Time/Date: 1010 2/23/16  
 Final Depth: 40'  
 Logged By: K. Lazzari

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
					1	Lithology not logged	
					2	Hit refusal at 40' - no well set	
					3		
					4		
					5		
					6		
					7		
					8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		
					21		
					22		
					23		
					24		
					25		
					26		
					27		
					28		
					29		
					30		
					31		
					32		
					33		
					34		
					35		
					36		
					37		
					38		
					39		
					40		

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# BORING/WELL CONSTRUCTION LOG

Project: ADU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620DT 2"  
 Driller: O. Waters  
 Boring Well ID: GW-35

Project Number: 6202899  
 Start Time/Date: 1402 2/23/16  
 Completion Time/Date: 1547 2/23/16  
 Final Depth: 45'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details		
ACETATE SLEEVE	NA	21/60	NA	SM	1	0-3" Topsoil	[Cross-hatched area]		
					2	3"-7.5' silty sand, 7.5%R 3/4 (dark brown), loose, <sup>dry</sup> <del>stiff</del> <sup>stiff</sup> <del>KL</del> Fine to coarse grained sand; few subangular - subrounded gravel (SS, and lithics)			
					3				
					4				
					5				
					6				
					7				
					35/60	ML		8	7.5'-10.5' silt, 10%R 5/6 (yellowish brown), soft, plastic, moist, few subangular gravel (0.25-1")
								9	
								10	
					54/60	SW		11	10.5'-11' well graded sand, 7.5%R 4/6 (strong brown), loose, dry, fine to coarse grained sand, 10% fines, few gravel 0.25"-0.5" (subrounded, lithic)
						CL		12	11'-13' sandy clay, 10%R 5/6 (yellowish brown), soft, plastic, wet, very fine grained sand
								13	
						CL		14	13'-16' same as above, moist, medium stiff
								15	
					56/60	SW		16	16'-16.5' well graded sand, 5%R 4/6 (yellowish red), loose, dry, fine to coarse grained sand, 10% fines, trace subangular gravel up to 0.5" (lithic)
						SP		17	16.5'-19.5' poorly graded sand, 5%R 4/6 (yellowish red), <del>stiff</del> <sup>medium</sup> dry, dense
								18	16.5'-19.5' poorly graded sand, 5%R 4/6 (yellowish red), <del>stiff</del> <sup>medium</sup> dry, dense
								19	16.5'-19.5' poorly graded sand, 5%R 4/6 (yellowish red), <del>stiff</del> <sup>medium</sup> dry, dense
								20	19'-22' sandy clay, 10%R 5/6 (yellowish brown), soft, plastic, moist, very fine grained sand
						CL		21	
					60/60			22	modified 10%R 6/6 (brownish yellow)
						CL		23	22'-24' clay, 10%R 5/6 (yellowish brown), stiff, plastic, dry, 10% very fine grained sand
								24	
						CL		25	24'-30' silty clay, 10%R 5/4 (yellowish brown), soft, plastic, moist, 5% very fine grained sand
								26	
					51/60	GC		27	26'-37' gravel with sand and clay, 7.5%R 4/6 (strong brown), medium dense, dry, fine to coarse grained sand, 20% clay (10%R 5/6 - brownish yellow), <sup>20%</sup>
								28	angular - subrounded gravel (0.25-2", lithics)
								29	
								30	
								31	
					58/60			32	
								33	
								34	
								35	
								36	
					47/60	CL		37	37'-45' sandy clay, 5%R 5/4 (reddish brown), medium stiff, moist, 10% very fine grained sand
								38	
								39	
								40	

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# BORING/WELL CONSTRUCTION LOG

Project: ADU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620-DT 2"  
 Driller: J. Waters  
 Boring Well ID: 4W-40

Project Number: 6202899  
 Start Time/Date: 1227 3/1/16  
 Completion Time/Date: 1359 3/1/16  
 Final Depth: 40'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details		
ACETATE SLEEVE	NA	NA	NA	CL	1	0-3" topsoil			
					2	3"-9' clay, 7.5 YR 5/3 (brown), very stiff, plastic, dry			
					3				
					4				
					5				
					6				
					7				
					8				
					9				
					10	52/60		SP	9'-10' poorly graded sand, 10YR 6/6 (brownish yellow), loose, dry, quartz grains, fine grained
					11	49/60		CL	10'-11' clay, 10YR 4/4 (yellowish dark brown), stiff, plastic, dry
					12	59/60		SP CUT	11'-12' poorly graded sand, 10YR 6/6 (brownish yellow), loose, dry, fine grained
					13			CL	12'-14' sandy clay, 7.5YR 5/6 (strong brown), medium stiff, slightly plastic, moist, fine grained sand.
					14			SC	14'-15' clayey sand, 7.5YR 4/6 (strong brown), medium dense, moist, fine grained sand
					15			CH	15'-17' clay 7.5YR 5/4 (brown), soft, plastic, moist
					16				17' grading to clayey sand
					17	54/60		SP	17'-20' poorly graded sand, 7.5YR 4/6 (strong brown), medium dense, mottled w/ 7.5YR 6/8 (reddish yellow)
					18				
					19				
					20				
					21	59/60		CH	20'-25' clay 7.5YR 5/6 (strong brown), medium stiff, plastic, moist
					22				
					23				
					24				
					25				
					26	69/60		SP/CL	25'-29' interbedded poorly graded sand and sandy clay, 7.5YR 5/6 (strong brown), layers 4-6" thick, sand (medium dense, moist, fine grained sand), sandy clay (medium stiff, slightly plastic, moist)
					27				
					28				
					29				
					30	57/60		SP/CL/SC	29'-40' interbedded poorly graded sand, sandy clay, and clay, 7.5YR 4/6 (strong brown)
					31				
					32				
					33				
					34				
					35				
					36				
					37	58/60			3/4" PVC Sch. 40
					38				PVC 0.010" silt screen: 35-40'
					39				Backfill: 0-33'
					40				Benzoite: 33-34' sand: 34-40'

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# BORING/WELL CONSTRUCTION LOG

Project: A04-1: East Side  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620DT 2"  
 Driller: O. Waters  
 Boring Well ID: GW-42

Project Number: 6202899  
 Start Time/Date: 1425 3/1/16  
 Completion Time/Date: 1549 3/1/16  
 Final Depth: 40'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
ACETATE SLEEVE	NA	NA	NA	ML	1	0-4" topsoil	
					2	4"-7" silt, 7.5 YR 4/6 (brown), stiff, nonplastic, dry, 15% sand (fine to medium grained), 20% gravel (up to 0.5", subangular to rounded, lithics)	
					3		
				4			
				CL	5		
					6		
					7		
					8	7'-13' clay, mottled 10YR 7/2 (light gray) and 10YR 8/6 (yellowish brown), medium dense, moist, plastic	
					9		
					10		
				SC	11		
					12		
					13		
					14	13'-18' clayey sand, 7.5 YR 4/6 (strong brown), medium stiff, moist, fine grained sand	
					15		
				GC	16		
					17		
					18		
					19	18'-23' clayey gravel, 7.5 YR 4/4 (brown), loose, dry, angular to subrounded gravel (lithics up to 2"), fine to coarse grained sand, 20% clay	
					20		
					21		
					22		
					23		
					24	23'-40" clayey sand, 7.5 YR 4/6 (strong brown), medium stiff, moist, fine to coarse grained sand, few gravel (subangular-rounded, lithics, up to 0.5")	
					25		
				GC	26	25'-40' clayey gravel, 7.5 YR 4/4 (brown), loose, dry, angular to subangular gravel (lithics, s.s. up to 2.5"), fine to coarse grained sand	
					27		
					28		
					29		
					30		
					31		
					32		
					33		
					34		
					35		
					36	Refusal @ 40' - No well set	
					37		
					38		
					39		
					40		

SS = Split Spoon, ST = Shelby Tube, CUT = Drill Cuttings, or Core



# BORING/WELL CONSTRUCTION LOG

Project: ADU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620DT 2"  
 Driller: C. Walker  
 Boring/Well ID: GW-43

Project Number: 6202899  
 Start Time/Date: 0824 3/3/16  
 Completion Time/Date: 0917 3/3/16  
 Final Depth: 35'  
 Logged By: K. Lassen

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
ACETATE SLEEVE		4/60		ML	1	0-4' sandy silt, 7.5% R 3/3 (dark brown), medium stiff, nonplastic, dry, fine grained sand, 15% gravel (angular to subrounded, lithic, up to 1/8")	
					2		
					3		
					4		
					5	4'-10' poorly graded sand, 7.5% R 5/6 (strong brown), medium dense, dry, fine grained sand, no gravel, primarily qtz grains	
					6		
		50/60			7		
					8		
					9		
					10		
					11	10'-16' poorly graded sand, 7.5% R 4/6 (strong brown), medium dense, dry, fine to medium grained sand, qtz and lithic grains, few gravel at 15' (lithic, rounded, up to 0.25")	
			51/60		12		
					13		
					14		
					15		
		NA		NA	16	16'-28' interbedded poorly graded sand and clayey sand, 7.5% R 4/6 (strong brown), medium dense, moist, fine to medium grained sand	
			56/60		17		
					18	wet + 27'	
					19		
					20		
					21		
			52/60		22		
					23		
					24		
					25		
					26		
					27		
			54/60		28		
					29		
					30		
					31	28'-35' clay, 2.5% R 8/2 (pale yellow), medium stiff, plastic, wet	
			56/60		32		
					33		
					34		
					35		
					3 1/4" PVC Sch. 40		
					PVC 0.010" slot screen: 28-33'		
					Backfill: 0-26'; 33-35'		
					Bentonite: 26-27'		
					Sand: 27-33'		

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# BORING/WELL CONSTRUCTION LOG

Project: A04-1 - East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 4620 DT 2"  
 Driller: D. Waters  
 Boring Well ID: GW-46

Project Number: 6202899  
 Start Time/Date: 0900 2/24/16  
 Completion Time/Date: 1040 2/24/16  
 Final Depth: 35'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details			
ACETATE SLEEVE	NA	NA	NA	SC	1	0-4" Topsoil				
					2	4"-8' silty clay, 7.5YR 4/6 (strong brown), medium dense, moist, fine to medium grained sand				
					3					
					4					
					5					
					6					
					7					
					8					
					9					
				SW	43/60				10	8'-10' well graded sand, 7.5YR 4/6 (strong brown), loose, dry, fine to very coarse grained (qtz, lithic), trace subrounded gravel up to 0.25"
									11	No gravel or very coarse grained sand at 9'
				SM					11	10'-11' silty sand, 7.5YR 4/3 (brown), medium dense, wet, fine grained sand
				SP	52/60				12	11'-15' poorly graded sand, 7.5YR 6/6 (strong brown), laminated with clay (7.5YR 7/1 light gray), dense, moist, fine grained sand (qtz)
									13	
									14	
									15	
				SM					16	15'-16' silty sand, 7.5YR 4/3 (brown), medium dense, moist, fine grained sand
				SP	51/60				17	16'-25' poorly graded sand, 7.5YR 4/6 (strong brown), laminated with clay (7.5YR 7/1 light gray), dense, moist, very fine to fine grained sand (qtz)
									18	
									19	clayey sand lenses at 23' and 24' (1" thick) 7.5YR 7/2 pinkish gray
									20	
									21	
									22	color change to 7.5YR 6/6 (reddish yellow)
									23	
									24	
									25	
				SM					26	25'-26' silty sand, 7.5YR 5/6 (strong brown), medium dense, moist, fine grained sand
				SP	52/60				27	26'-35' poorly graded sand, 7.5YR 6/6 (reddish yellow), dense, moist, fine grained sand
									28	
									29	wet at 24'
									30	
									31	
									32	
									33	
									34	
				35						
					3 1/4" PVC sch. 40 PVC 0.010" slot screen: 30-35'					
					Backfill: 0-26' Bentonite: 28-29' Sand: 29-35'					

SS = Split Spoon, ST = Shelby Tube, CUT = Drill Cuttings, or Core





# BORING/WELL CONSTRUCTION LOG

Project: AOU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620DT 2"  
 Driller: a. waters  
 Boring Well ID: GW-48

Project Number: 6202899  
 Start Time/Date: 1103 2/24/16  
 Completion Time/Date: 1350 2/24/16  
 Final Depth: 40'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details		
ACETATE SLEEVE	NA	NA	NA	SM	1	0-4" Topsoil	[Cross-hatched pattern]		
					2	4"-1' silty sand, 7.5 YR 2.5/1 (black), medium dense, moist, fine grained sand			
				16/60	3	1'-15.5' <del>silty sand</del> <sup>poorly graded sand</sup> 7.5 YR 5/8 (strong brown), medium dense, moist, very fine grained sand, 10% fines, quartz grains, 2" silty sand lenses at 10', 12', and 13' (7.5 YR 5/8, strong brown, moist, fine grained sand, 15% silt)			
					4				
					5				
					6				
					7				
				31/60	8	SP		9	
					10				
					11				
					12				
				45/60	13				
					14				
					15				
					16	SP SW		17	15.5'-16' sand with gravel, 7.5 YR 5/6 (strong brown), dry, loose, fine to coarse grained sand, 20% gravel (angular - subangular, qtz, lithics, up to 2")
				51/60	18	CL		19	16'-20' sandy clay, 7.5 YR 8/4 (pink), medium stiff, plastic, dry, fine grained quartz sand (10%)
					20				
					21				
					22	CH		23	
				55/60	24			25	20'-24' <del>sandy clay</del> <sup>silty clay</sup> 7.5 YR 6/4 (light brown), moist, soft, slightly plastic, 20% quartz sand (fine grained), few gravel (subangular - subrounded, lithics, up to 2")
					26	SM		27	24'-26' silty sand, 7.5 YR 5/6 (strong brown), medium dense, dry, very fine grained sand, 15% silt
					28				
				59/60	29	GC		30	26'-31' silty sand <del>KL</del> clayey gravel, 7.5 YR 4/6 (strong brown), medium dense, dry, fine to coarse grained sand, 15% clay (7.5 YR 6/4 light brown)
					31	ML		32	30'-32' <del>silty</del> <sup>KL</sup> sandy silt grading to silty sand, medium stiff/medium dense, dry, fine grained sand
					33			34	32'-34.5' silty gravel, 7.5 YR 5/6 (strong brown), <del>loose</del> <sup>KL</sup> medium dense, dry, fine to coarse grained sand (25%), gravel subangular to subrounded (lithics, up to 2.5"), 20% silt
					35	GM		36	34.5'-37' sandy clay, 7.5 YR 5/6 (strong brown), medium dense, <del>KL</del> <sup>stiff</sup> wet, fine grained sand
					37	CL		38	
					39			40	37'-40' clayey sand, 7.5 YR 5/6 (strong brown), medium dense, wet, fine grained sand
					54/60	SC		39	3 1/4" PVC Sch. 40 PVC 0.010" slot screen: 35-40'
								40	Backfill: 0-33' sand; 34-40' bentonite: 33-34'

SS = Split Spoon, ST = Shelby Tube, CUT = Drill Cuttings, or Core



# BORING/WELL CONSTRUCTION LOG

Project: A04-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620DT 2"  
 Driller: O. Waters  
 Boring Well ID: GW-49

Project Number: 6202899  
 Start Time/Date: 0813 2/25/16  
 Completion Time/Date: 0851 2/25/16  
 Final Depth: 15'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
					1	No lithology logged	
					2		
					3	3/4" PVC Sch. 40	
					4	PVC 0.010" slot screen: 7.5'-12.5'	
					5		
					6	Backfill: 0-5', 12.5-15'	
					7	Bentonite: 5'-6'	
					8	Sand: 6-12.5'	
					9		
					10	Well completed with monitoring well manhole and concrete apron	
					11		
					12		
					13		
					14		
					15		

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# BORING/WELL CONSTRUCTION LOG

Project: AOU-1; East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620DT 2"  
 Driller: O. Waters  
 Boring/Well ID: GW-50

Project Number: 6202899  
 Start Time/Date: 1155 2/26/16  
 Completion Time/Date: 1226 2/26/16  
 Final Depth: 10'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other)	Boring and/or Well Details
					1	No lithology logged	
					2		
					3	3/4" PVC Sch. 40	
					4	PVC 0.010" slot screen: 4-9'	
					5	Backfill: 0-2'; 9-10'	
					6	Bentonite: 2'-3'	
					7	Sand: 3-9'	
					8		
					9		
					10	well completed with monitoring well manhole and concrete apron	



# BORING/WELL CONSTRUCTION LOG

Project: **AO4-1: East Side Springs**  
 Drilling Company: **Cascade Drilling**  
 Drilling Rig/Bit: **Geoprobe 6620DT 2"**  
 Driller: **O. Waters**  
 Boring/Well ID: **GW-5i**

Project Number: **6202899**  
 Start Time/Date: **1311 3/4/16**  
 Completion Time/Date: **1400 3/4/16**  
 Final Depth: **15'**  
 Logged By: **K. Lazzari**

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other)	Boring and/or Well Details
					1	No lithology logged	
					2		
					3		
					4		
					5		
					6	3/4" PVC Sch. 40	
					7	PVC 0.010" slot screen: 10-15'	
					8	Backfill: 0-8'	
					9	Bentonite: 8-9'	
					10	Sand: 9-15'	
					11		
					12		
					13		
					14		
					15		



# BORING/WELL CONSTRUCTION LOG

Project: AOU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620 DT 2"  
 Driller: O. Waters  
 Boring/Well ID: GW-52

Project Number: 6202899  
 Start Time/Date: 1021 3/2/16  
 Completion Time/Date: 1100 3/2/16  
 Final Depth: 30'  
 Logged By: K. Lutzen

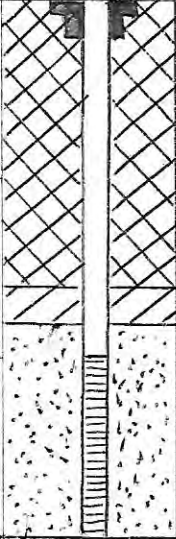
Sample Type	Blow Counts/6"	Sample Interval - Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other)	Boring and/or Well Details			
ACETATE SLEEVE	NB	0/100	NA	CL	1	0-4" topsoil				
					2	4"-5' No Recovery				
					3					
					4					
					5					
		6		58/100	CL	6		5'-6' clay, 2.5Y 7/2 (light gray), medium stiff, slightly plastic, dry, 15% fine		
		7				6'-16' poorly graded sand with interbedded, sandy clay layers, 7.5 YR 6/6 (reddish yellow), dense, moist, fine grained sand, sandy clay layers				
		8				~1" thick.				
		9								
		10		54/100	SP	11				
		12								
		13								
		14								
		15								
		16								
		17		48/100	SW	17		16'-17' well graded sand, 10 YR 4/6 (dark yellowish brown), loose, dry, fine to coarse grained, qtz and lithic grains		
		18				17'-25' sandy clay, 5 YR 4/6 (yellowish red), medium stiff, slightly plastic, moist, fine grained sand to medium grained sand, trace gravel up to 0.25" (subrounded to rounded)				
		19								
		20		58/100	CL	21				
		22								
		23								
		24								
		25								
		26		59/100	SC	26		25-30 clayey sand, 5 YR 4/6 (yellowish red), medium dense, wet, fine grained sand		
		27								
		28								
		29								
		30								
									3/4" PVC Sch. 40 PVC 0.010" slot screen: 25-30'	
									Backfill: 0-23' Bentonite: 23-24' Sand: 24-30'	
					Well completed with monitoring well manhole and concrete apron					



# BORING/WELL CONSTRUCTION LOG

Project: ADU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620 BT 2"  
 Driller: O. Waters  
 Boring/Well ID: GW-~~66~~ 53

Project Number: 6202899  
 Start Time/Date: 0947 3/2/16  
 Completion Time/Date: 10:3 3/2/16  
 Final Depth: 15'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval - Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
ACETATE SLEEVE	NA	NA	NA	NA	1	Lithology Not logged	
					2		
					3		
					4		
					5		
					6		
					7		
					8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		
						Well completed with monitoring well manhole and concrete apron	

SS = Split Spoon, ST = Shelby Tube, CUT = Drill Cuttings, or Core





# BORING/WELL CONSTRUCTION LOG

Project: ADU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620 DT 2'  
 Driller: Cascade Drilling K. O. Waters  
 Boring Well ID: Gw-54

Project Number: 6202899  
 Start Time/Date: 1335 3/3/16  
 Completion Time/Date: 1443 3/3/16  
 Final Depth: 13.3'  
 Logged By: K. Lazzen

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
ACETATE SLEEVE	NA	0/60	NA	CH	1	0-4" topsoil	
					2	4"-5" No recovery	
					3		
					4		
					5		
		56/60		6	5'-12" clay, 10%R 6/3 (pale brown), soft, plastic, moist, trace fine grained sand, mottled 10%R 5/8 (yellowish brown)		
				7			
				8			
				9			
				10			
		34/36		11			
				12			
				13	12.5' - 13.3' clayey sand, 7.5%R 5/6 (strong brown), medium dense, wet, fine grained sand		
				SS			
				Seal			
					3/4" PVC - Sch. 40		
					Pvc 0.010" slot screen: 8-3 KL 8.3-13.3'		
					Backfill: 0-6'		
					Bentonite: 6-7'		
					Sand: 7-13.3'		

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# BORING/WELL CONSTRUCTION LOG

Project: AOU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6020DT 2"  
 Driller: O. Waters  
 Boring/Well ID: GW-55

Project Number: 6202874  
 Start Time/Date: 1056 3/3/16  
 Completion Time/Date: 1152 3/3/16  
 Final Depth: 25'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other)	Boring and/or Well Details
					1	No lithology logged	
					2		
					3		
					4		
					5		
					6	3/4" PVC Sch. 40.	
					7	PVC 0.010" slot screen: 17-22'	
					8		
					9	Backfill: 0-15'; 22-25'	
					10	Bentonite: 15-16'	
					11	Sand: 16-22'	
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		
					21		
					22		
					23		
					24		
					25		



# BORING/WELL CONSTRUCTION LOG

Project: A04-1: East side springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6020DT 2"  
 Driller: O. Waters  
 Boring/Well ID: GW-57

Project Number: 6202899  
 Start Time/Date: 0910 3/5/16  
 Completion Time/Date: 1015 3/5/16  
 Final Depth: 33'  
 Logged By: K. Lazzari

Sample Type	Blow Counts/6"	Sample Interval	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/mineralogy, other)	Boring and/or Well Details
					1	No lithology logged	
					2		
					3	Hit refusal at 33' - no well set	
					4		
					5		
					6		
					7		
					8		
					9		
					10		
					11		
					12		
					13		
					14		
					15		
					16		
					17		
					18		
					19		
					20		
					21		
					22		
					23		
					24		
					25		
					26		
					27		
					28		
					29		
					30		
					31		
					32		
					33		



# BORING/WELL CONSTRUCTION LOG

Project: A04-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620DT 2"  
 Driller: O. Waters  
 Boring/Well ID: GW-58

Project Number: 6202894  
 Start Time/Date: 1037 3/5/16  
 Completion Time/Date: 1140 3/5/16  
 Final Depth: 40'  
 Logged By: K. Lazzari

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
				CL	1	0-5" topsoil	
		32/60			2	5"-10' clay, stiff, slightly plastic, dry, 2.5 Y 7/1 (light gray), some mottling 10YR 5/8 (yellowish brown)	
					3		
					4		
					5		
					6		
		46/60			7		
					8		
					9		
					10		
				CH	11	10'-14' clay, mottled 2.5Y 6/3 (light yellowish brown) and 10YR 6/6 (brownish yellow), medium stiff, plastic, moist	
		47/60			12		
					13		
					14		
				CL	15	14'-15' sandy clay, 10YR 6/4 (light yellowish brown), medium stiff, slightly plastic, moist, fine grained sand	
				CH	16	15'-17.5' clay, 2.5Y 5/3 (light olive brown), medium stiff, plastic, moist	
					17		
		56/60		SC	18	17.5'-20' clayey sand, dense, moist, 7.5YR 5/6 (strong brown), fine grained sand	
					19		
					20		
				CL	21	20'-21' clay, 2.5Y 6/2 (light brownish gray), stiff, plastic, moist	
		54/60			22	21'-40' clayey gravel, 7.5YR 4/6 (strong brown), medium dense, dry, fine to coarse grained sand (20%), gravel angular to subangular (lithics, limestone, up to 2.5")	
					23		
					24		
					25		
					26		
		46/60			27		
					28		
				CL	29		
					30		
					31		
					32		
		51/60			33		
					34		
					35		
					36	Refusal at 40' - no well set	
					37		
		49/60			38		
					39		
					40		



# BORING/WELL CONSTRUCTION LOG

Project: A04-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig Bit: Geoprobe 6620DT 2"  
 Driller: O. Waters  
 Boring Well ID: GW-59

Project Number: 6202899  
 Start Time Date: 1436 3/4/16  
 Completion Time Date: 1503 3/4/16  
 Final Depth: 15'  
 Logged By: K. Lazenby

Sample Type	Blow Counts/6"	Sample Interval	PH Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density consistency, plasticity, moisture, grain size, angularity, mineralogy, other)	Boring and or Well Details
					1	No lithology logged	
					2		
					3	3/4" PVC Sch. 40	
					4	PVC 0.010" slot screen: 10-15'	
					5		
					6	Backfill: 0-8'	
					7	Bentonite: 8-9'	
					8	Sand: 9-15'	
					9		
					10	Well completed with monitoring well manhole and concrete apron	
					11		
					12		
					13		
					14		
					15		

SS = Split spoon, ST = Shelby Tube, CUT = Drill Cuttings (or Core)



# BORING/WELL CONSTRUCTION LOG

Project: AOU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620 DT  
 Driller: O. Waters  
 Boring Well ID: GW-60

Project Number: 6202899  
 Start Time/Date: 1108 3/8/16  
 Completion Time/Date: 1236 3/8/16  
 Final Depth: 15'  
 Logged By: K. Lazen

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
ACETATE SLEEVE	NA	31/60	NA	ML	1	0-4" topsoil	
					2	4"-5' sandy silt, 10 YR 3/3 (dark brown), medium stiff, nonplastic, dry, fine grained sand	
					3		
					4		
					5		
	6	47/60	NA	SC	6	5'-12' clayey sand, 10 YR 7/3 (very pale brown), medium dense, moist, fine grained sand	
	7						
	8						
	9						
	10	58/60		SC	10	10'-15' clayey sand, 7.5 YR 5/2 (brown), medium dense, wet, fine grained sand, 25% fines	
	11						
	12						
	13						
	14						
	15						
						3/4" PVC Sch. 40 PVC 0.010" slot screen: 10-15'  Backfill: 0-8' Bentonite: 8-9' Sand: 9-15'	

SS = Split Spoon, ST = Shelby Tube, CUT = Drill Cuttings, or Core







# BORING/WELL CONSTRUCTION LOG

Project: ADU-1: East Side Springs  
 Drilling Company: Cascade Drilling  
 Drilling Rig/Bit: Geoprobe 6620 DT  
 Driller: O. Waters  
 Boring Well ID: GW-02

Project Number: 6202899  
 Start Time/Date: 1301 3/8/16  
 Completion Time Date: 1345 3/8/16  
 Final Depth: 20  
 Logged By: K. Lazzari

Sample Type	Blow Counts/6"	Sample Interval Recovery	PID Reading	USCS Soil Type	Depth, ft bgs	Soil Description (Order: soil type, color, density/consistency, plasticity, moisture, grain size, angularity/minerology, other)	Boring and/or Well Details
ACETATE SLEEVE	NA	31/60	NA	ML	1	0-5" topsoil	
					2	5"-2' silt, 7.5 YR 4/2 (brown), medium stiff, nonplastic, dry, 20% sand (fine-medium grained)	
					3	2'-7' +/- sandy clay, 7.5 YR 4/6 (strong brown), medium stiff, plastic, dry, fine to medium grained sand	
					4		
				CL	5		
					6		
					7		
				GC	8	7'-10' clayey gravel, 7.5 YR 4/6 (strong brown), medium dense, dry, fine to coarse grained sand, angular to subangular gravel (lithics, up to 2")	
					9		
				CL	10		
					11	10'-11' sandy clay, 7.5 YR 4/6 (strong brown), medium stiff, plastic, moist, fine grained sand	
					12		
				GC	13	11'-20' clayey gravel, 7.5 YR 4/6 (strong brown), medium dense, wet, fine to medium grained sand, angular to subangular gravel (lithics, limestone, 2.5")	
					14		
					15		
					16		
					17		
					18		
					19		
					20		
						3/4" PVC Sch. 40 PVC 0.010" slot screen: 15-20'  Backfill: 0-13' Bentonite: 13-14' Sand: 14-20'	

SS = Split Spoon, ST = Shelby Tube, CUT = Drill Cuttings, or Core



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-12D</b>	SHEET 1 OF 4
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : 900 S and McClelland Street  
 ELEVATION : 4360.4 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442139.32, E 1540463.96      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 15.0 ft bgs      START : 7/16/2018      END : 7/16/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0.0				No recovery from 0-5' bgs.	Hand auger to 5' bgs.	3 ft x 3 ft concrete pad with 8" steel vault Concrete
5.0				<b>LEAN CLAY (CL)</b> greenish gray (Gley 1 6/10Y), moist, stiff, medium-high plasticity, occasional rust streaks. Gravel (0%), sand (5%), fines (95%).  Becomes firm.		Bentonite pellets
10.0				Frequent interbedded silt layers up to 1" thick.		2" schedule 40 PVC
20.0				<b>SANDY SILT (ML)</b> brown (7.5YR 4/3), wet, firm, nonplastic fines. Gravel (0%), sand (35%), fines (65%). <b>SILTY SAND (SM)</b> brown (7.5YR 4/3), wet, medium dense, poorly-graded fine sand. Gravel (0%), sand (65%), fines (35%).		
25.0				<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> greenish gray (Gley 1 6/10Y), moist, stiff, medium-high plasticity. Gravel (15%), sand (15%), fines (70%). <b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (10YR 5/3), wet to moist, dense, well-graded sand and gravel. Gravels up to 3". Subrounded to subangular gravels. Gravel (50%), sand (30%), fines (20%).	Possibly no longer saturated.	

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19

PID = 0.0



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-12D</b>	SHEET 2 OF 4
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : 900 S and McClelland Street

ELEVATION : 4360.4 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic

COORDINATES : N 7442139.32, E 1540463.96      DRILLING METHOD AND EQUIPMENT : Sonic 4x6

WATER LEVEL : 15.0 ft bgs      START : 7/16/2018      END : 7/16/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
30	10.0	PID = 0.0		<b>SILTY GRAVEL WITH SAND (GM)</b> brown (10YR 5/3), moist, dense, well-graded sand and gravel. Gravels up to 3". Subangular gravels. Gravel (60%), sand (25%), fines (15%).		
30				<b>GRAVELLY CLAY WITH SAND (CL)</b> yellowish brown / moderate yellowish brown (10YR 5/4), moist to wet, firm to soft, medium plasticity.		
35	10.0	PID = 0.1		<b>SILTY GRAVEL WITH SAND (GM)</b> brown (10YR 5/3), moist to wet, dense, well-graded sand and gravel. Gravels up to 3". Gravel (40%), sand (35%), fines (25%).		
40		PID = 0.5		<b>SILT WITH SAND (ML)</b> brown (7.5YR 4/3), moist to wet, soft, low plasticity. Gravel (5%), sand (15%), fines (80%).	Possibly saturated.	
40				<b>POORLY GRADED SAND WITH SILT AND GRAVEL (SP)</b> brown (7.5YR 4/3), moist to wet, medium dense, fine-grained sand. Gravel (10%), sand (80%), fines (10%).		
45	10.0	PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/3), moist to wet, dense, well-graded sand and gravel. Gravels up to 3". Gravel (50%), sand (20%), fines (30%).		
45				<b>SILTY GRAVEL WITH SAND (GM)</b> brown (7.5YR 4/3), moist to wet, dense, well-graded sand and gravel. Gravels up to 3". Occasional cobbles. Subangular gravel. Gravel (50%), sand (25%), fines (25%).		
50		PID = 0.1				Bentonite pellets  2" schedule 40 PVC

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-12D</b>	SHEET 3 OF 4
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : 900 S and McClelland Street

ELEVATION : 4360.4 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic

COORDINATES : N 7442139.32, E 1540463.96      DRILLING METHOD AND EQUIPMENT : Sonic 4x6

WATER LEVEL : 15.0 ft bgs      START : 7/16/2018      END : 7/16/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
55	10.0	PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (10YR 4/3), moist, very dense, poorly-graded gravels (mostly pea gravel). Some gravels up to 2". Gravel (45%), sand (25%), fines (30%).  Becomes dry at 57.5' bgs.		
60		PID = 0.0		<b>SANDY SILT (ML)</b> reddish brown / moderate brown (5YR 4/4), moist to wet, firm, nonplastic. Gravel (0%), sand (35%), fines (65%). Becomes wet (saturated) at 59.5' bgs.		Bentonite pellets
65	10.0	PID = 0.0		<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown / moderate brown (5YR 4/4), wet, dense, well-graded sand, poorly-graded gravel. Gravels up to 1". Gravel (45%), sand (35%), fines (20%). <b>SANDY LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), wet, soft, medium plasticity, poorly-graded fine sand. Gravel (0%), sand (35%), fines (65%). <b>LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), moist, firm to stiff, medium-high plasticity. Occasional sand layer. Gravel (0%), sand (10%), fines (90%). 2" sand layer at 65.5' bgs. 5" sand layer 67' bgs.		2" schedule 40 PVC
70		PID = 0.0		<b>SILTY SAND WITH GRAVEL (SM)</b> brown (10YR 4/3), wet, dense, well-graded sand, poorly-graded gravel. Gravel (20%), sand (60%), fines (20%). <b>SILTY GRAVEL WITH SAND (GM)</b> brown (10YR 4/3), wet, dense, well-graded sand and gravel. Gravel (50%), sand (30%), fines (20%).		
75	10.0	PID = 0.0		<b>LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), moist to wet, firm to stiff, medium plasticity. Silt layers up to 6". Gravel (0%), sand (10%), fines (90%).		

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-12D</b>	SHEET <b>4</b> OF <b>4</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : 900 S and McClelland Street  
 ELEVATION : 4360.4 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442139.32, E 1540463.96      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 15.0 ft bgs      START : 7/16/2018      END : 7/16/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
80	10.0	PID = 0.0		<b>GRAVELLY CLAY WITH SAND (CL)</b> reddish brown / moderate brown (5YR 4/4), moist to wet, stiff to firm, medium plasticity, well-graded gravels. Occasional cobble. Gravel (25%), sand (10%), fines (65%).		
85	10.0	PID = 0.0		<b>SANDY LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), wet, stiff, medium plasticity.		Bentonite pellets
85	10.0	PID = 0.0		<b>LEAN CLAY (CL)</b> brown (10YR 4/3), moist, stiff, medium-high plasticity. Gravel (0%), sand (5%), fines (95%).		2" schedule 40 PVC
90	5.0	PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), wet, very dense, well-graded sand and gravel. Occasional cobble. Gravel (50%), sand (30%), fines (20%).		20/40 silica sand
90	5.0	PID = 0.0		<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown / moderate brown (5YR 4/4), wet, dense, well-graded sand and gravel. Occasional cobble. Gravel (50%), sand (30%), fines (20%).		0.010" slotted screen, 2" sch. 40 PVC
95		PID = 0.0		<b>SANDY LEAN CLAY WITH GRAVEL (CL)</b> reddish brown / moderate brown (5YR 4/4), wet, soft, medium plasticity. Gravel (20%), sand (25%), fines (55%).		
95				<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), wet, dense, well-graded sand and gravel. Gravel (50%), sand (30%), fines (20%). Boring terminated at 95 ft bgs.		3/8" bentonite chips
100						

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-12S</b>	SHEET 1 OF 3
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : 900 S and McClelland Street  
 ELEVATION : 4360.4 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442144.49, E 1540464.04      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 57.0 ft bgs      START : 7/16/2018      END : 7/17/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0.0				No recovery from 0-5' bgs.	Hand auger to 5' bgs.	<p>3 ft x 3 ft concrete pad with 8" steel vault Concrete</p>
5.0				<b>LEAN CLAY (CL)</b> greenish gray (10GY 6/1), moist, stiff, medium-high plasticity. Occasional rust streaks. Gravel (0%), sand (5%), fines (95%).  Becomes firm.		
10.5				Silt layers up to 4" thick. Saturated.		3/8" bentonite chips
20.0		PID = 0.0		<b>SANDY SILT (ML)</b> brown (7.5YR 4/3), wet, firm, nonplastic fines. Gravel (0%), sand (35%), fines (65%). <b>SILTY SAND (SM)</b> brown (7.5YR 4/3), wet, medium dense, poorly-graded fine sand, nonplastic fines. Gravel (0%), sand (65%), fines (35%).		
25.0		PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> greenish gray (10GY 6/1), dry to moist, dense, well-graded sand and gravel, occasional cobbles. Gravel (50%), sand (25%), fines (25%).		2" schedule 40 PVC

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-12S</b>	SHEET 2 OF 3
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : 900 S and McClelland Street  
 ELEVATION : 4360.4 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442144.49, E 1540464.04      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 57.0 ft bgs      START : 7/16/2018      END : 7/17/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
9.5				<b>SILTY GRAVEL WITH SAND (GM)</b> brown (10YR 4/3), moist to dry, dense, well-graded sand and gravel. Gravels up to 3". Gravel (50%), sand (30%), fines (20%).		
30		PID = 0.0				
35	10.0					3/8" bentonite chips
40						2" schedule 40 PVC
45	10.0			<b>SANDY SILT (ML)</b> brown (7.5YR 4/3), moist to wet, firm, low plasticity. Gravel (5%), sand (25%), fines (70%). <b>SILTY GRAVEL WITH SAND (GM)</b> brown (7.5YR 4/3), moist, dense, well-graded sand and gravel. Gravel (45%), sand (25%), fines (30%)		
50		PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/3), moist to wet, dense, well-graded sand and gravel, occasional cobbles. Gravel (45%), sand (25%), fines (30%).		20/40 silica sand

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-12S</b>	SHEET <b>3</b> OF <b>3</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : 900 S and McClelland Street  
 ELEVATION : 4360.4 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442144.49, E 1540464.04      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 57.0 ft bgs      START : 7/16/2018      END : 7/17/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
55	10.0	PID = 0.8		<b>SANDY SILT (ML)</b> brown (7.5YR 4/4), moist to wet, firm, nonplastic fines, poorly-graded fine sand. Gravel (0%), sand (35%), fines (65%).		
				<b>SILTY GRAVEL WITH SAND (GM)</b> brown (10YR 4/3), moist to wet, dense, well-graded sand, poorly-graded gravel. Gravels up to 1". Gravel (45%), sand (40%), fines (15%).		
60		PID = 0.0		<b>SANDY SILT (ML)</b> brown (7.5YR 4/4), wet, firm, nonplastic fines, poorly-graded fine sand. Gravel (0%), sand (35%), fines (65%).		
				<b>SILTY GRAVEL WITH SAND (GM)</b> brown (10YR 4/3), wet, dense, well-graded sand, poorly-graded gravel. Gravel up to 1". Gravel (45%), sand (40%), fines (15%).		
	5.0			<b>LEAN CLAY (CL)</b> brown (7.5YR 4/4), moist, stiff, medium plasticity. Gravel (0%), sand (5%), fines (95%).		
65		PID = 0.0		<b>INTERBEDDED SILTY SAND (SM) WITH SANDY SILT (ML)</b> brown (7.5YR 4/4), wet, firm or dense. Gravel (0%), sand (50%), fines (50%).		
				<b>SANDY LEAN CLAY (CL)</b> brown (7.5YR 4/4), wet, soft, medium plasticity. Gravel (0%), sand (40%), fines (60%). Boring terminated at 65 ft bgs.		
70						
75						

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-13D</b>	SHEET 1 OF 4
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : South side of East HS  
 ELEVATION : 4483.0 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442104.66, E 1541840.21      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 15.0 ft bgs      START : 7/12/2018      END : 7/13/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0.0	0.0			No recovery from 0-3' bgs.	Hand auger to 3.5' bgs.	3 ft x 3 ft concrete pad with 8" steel vault Concrete
5.0		PID = 0.0		<b>LEAN CLAY (CL)</b> dark brown (10YR 3/3), moist, firm to stiff, medium plasticity. Gravel (0%), sand (5%), fines (95%).	Fill material.	
7.0				Color change to yellowish brown (10YR 5/4).		
10.0		PID = 0.0		<b>SILTY SAND WITH GRAVEL (SM)</b> reddish brown / moderate brown (5YR 4/4), wet, medium dense, poorly-graded fine sand. Gravel (10%), sand (75%), fines (15%).	Woody debris (possibly 2x4s) at 15'. Native material begins after 15' bgs.	Bentonite pellets
15.0	10.0	PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), wet, dense, well-graded sand and gravel. Gravel (50%), sand (20%), fines (30%).		
20.0		PID = 0.1		<b>SANDY SILT (ML)</b> reddish brown / moderate brown (5YR 4/4), wet, firm, nonplastic. Gravel (0%), sand (35%), fines (65%). <b>SILTY SAND (SM) TO CEMENTED SAND (SM)</b> brown (10YR 4/3), wet, medium dense, poorly-graded fine sand. Gravel (0%), sand (85%), fines (15%).		
25.0	10.0	PID = 0.1		<b>SANDY LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), wet, soft, low plasticity. Gravel (0%), sand (40%), fines (60%).		2" schedule 40 PVC

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19





<b>PROJECT NUMBER:</b> 683085	<b>BORING NUMBER:</b> MW-13D	<b>SHEET 2 OF 4</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : South side of East HS  
 ELEVATION : 4483.0 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442104.66, E 1541840.21      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 15.0 ft bgs      START : 7/12/2018      END : 7/13/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
10.0						
30		PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), wet, medium dense, well-graded sand and gravel. Gravels up to 2". Gravel 50%, sand 20%, fines 30%.		Bentonite pellets
				<b>LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), wet, soft, medium plasticity. Gravel (50%), sand (20%), fines (30%).		
35	10.0	PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), wet, medium dense, well-graded sand and gravel. Gravel up to 3". Occasional cobbles. Gravel (45%), sand (35%), fines (20%).	Gradational contact.	
40		PID = 0.0		<b>LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), wet, soft, medium plasticity. Gravel (0%), sand (5%), fines (95%).		
				<b>GRAVELLY CLAY WITH SAND (CL)</b> reddish brown / moderate brown (5YR 4/4), wet, firm, medium plasticity, poorly-graded fine gravel. Gravel (30%), sand (10%), fines (60%).		2" schedule 40 PVC
45	10.0	PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), wet, dense, well-graded sand and gravel. Gravels up to 3". Occasional cobbles. Subrounded to subangular gravels and cobbles. Gravel (50%), sand (25%), sand (25%).		
50		PID = 0.0				

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-13D</b>	SHEET <b>3</b> OF <b>4</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : South side of East HS  
 ELEVATION : 4483.0 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442104.66, E 1541840.21      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 15.0 ft bgs      START : 7/12/2018      END : 7/13/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
55	10.0	PID = 0.0		Increased fines. Gravel (40%), sand (15%), fines (45%). Cobbles become more frequent.		
60		PID = 0.0		Decreased fines and cobbles. Gravel (40%), sand (35%), fines (25%).  7" sandy clay layer at 57.5' bgs.		
65	10.0	PID = 0.0		<b>LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), wet, soft to very soft, medium-high plasticity. Gravel (0%), sand (10%), fines (90%).	Pushed a Shelby from 60-62' bgs. Gradational contact.	Bentonite pellets
70		PID = 0.0		Becomes dry from 65-66.5' bgs. May have been cemented.  Becomes firm.		2" schedule 40 PVC
75	8.0	PID = 0.0		<b>SILTY SAND (SM)</b> reddish brown / moderate brown (5YR 4/4), wet, loose, well-graded fine sand, some clayey layers.	Pushed a Shelby from 70-72' bgs.  Core barrel came up empty during the first run from 70-80' bgs. It was redrilled and the sample came up disturbed from being redrilled.	

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-13D</b>	SHEET <b>4</b> OF <b>4</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : South side of East HS

ELEVATION : 4483.0 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic

COORDINATES : N 7442104.66, E 1541840.21      DRILLING METHOD AND EQUIPMENT : Sonic 4x6

WATER LEVEL : 15.0 ft bgs      START : 7/12/2018      END : 7/13/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
8.0				<b>LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), wet, stiff, medium plasticity. Gravel (0%), sand (10%), fines (90%).		<p>20/40 silica sand</p> <p>0.010" slotted screen, 2" sch. 40 PVC</p> <p>3/8" bentonite chips</p>
80		PID = 0.0		<b>CLAYEY SAND WITH GRAVEL (SC)</b> reddish brown / moderate brown (5YR 4/4), wet, loose, well-graded sand, poorly-graded fine gravel. Gravel (10%), sand (50%), fines (40%).		
5.0				<b>POORLY GRADED SAND WITH SILT (SP)</b> brown (7.5YR 4/3), wet, loose, fine-grained sand. Gravel (0%), sand (90%), fines (10%).		
85		PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), wet, dense, well-graded sand and gravel. Gravels up to 3". Gravel (50%), sand (20%), fines (30%).		
5.0				<b>LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), moist, stiff, medium-high plasticity. Gravel (0%), sand (5%), fines (95%).		
90				<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> reddish brown / moderate brown (5YR 4/4), moist to wet, firm to stiff, medium-high plasticity. Gravel (15%), sand (10%), fines (75%). Boring terminated at 90 ft bgs.		
95						
100						

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19



<b>PROJECT NUMBER:</b> 683085	<b>BORING NUMBER:</b> MW-13S	<b>SHEET 1 OF 1</b>
<b>Borehole Log</b>		

<b>PROJECT :</b> OU-2 Remedial Investigation (Phase 1)	<b>LOCATION :</b> South side of East HS		
<b>ELEVATION :</b> 4483.1 ft msl (ground surface)	<b>DRILLING CONTRACTOR AND DRILL RIG :</b> Holt, Terrasonic		
<b>COORDINATES :</b> N 7442104.9, E 1541844.81	<b>DRILLING METHOD AND EQUIPMENT :</b> Sonic 4x6		
<b>WATER LEVEL :</b> 15.0 ft bgs	<b>START :</b> 7/14/2018	<b>END :</b> 7/14/2018	<b>LOGGER :</b> J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0.0	0.0			No recovery from 0-3' bgs.	Hand auger to 3.5' bgs.	3 ft x 3 ft concrete pad with 8" steel vault
5.0		PID = 0.0		<b>LEAN CLAY (CL)</b> dark brown (10YR 3/3), moist, firm to stiff, medium plasticity, some organics. Gravel (5%), sand (5%), fines (90%).		Concrete
7.0				<b>SILTY SAND (SM)</b> dark brown (10YR 3/3), dry, loose, poorly-graded fine sand. Gravel (0%), sand (60%), fines (40%).		
10.0		PID = 0.0		<b>LEAN CLAY (CL)</b> dark brown (10YR 3/3), moist, firm to stiff, medium plasticity, some organics. Gravel (5%), sand (5%), fines (90%).		Bentonite pellets
15.0		PID = 0.0		<b>SILTY SAND (SM)</b> reddish brown / moderate brown (5YR 4/4), moist to wet, medium dense, poorly-graded fine sand. Gravel (0%), sand (80%), fines (20%).	Large wood pieces found in the core.	2" schedule 40 PVC
15.0	11.0	PID = 0.0		<b>SILTY SAND WITH GRAVEL (SM)</b> reddish brown / moderate brown (5YR 4/4), wet, medium dense, well-graded sand and gravel. Rounded gravels. Gravel (35%), sand (50%), fines (20%).		20/40 silica sand
15.0				<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), wet, dense, well-graded sand and gravel, some cobbles. Gravel (50%), sand (20%), fines (30%).		
20.0		PID = 0.0		<b>SANDY SILT (ML)</b> reddish brown / moderate brown (5YR 4/4), wet, firm, nonplastic fines. Gravel (0%), sand (35%), fines (65%).		0.010" slotted screen, 2" sch. 40 PVC
20.0				<b>CLAYEY SAND (SC)</b> reddish brown / moderate brown (5YR 4/4), wet, loose, poorly-graded fine sand. Gravel (0%), sand (55%), fines (45%).		
20.0				<b>SANDY LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), wet, stiff, medium plasticity. Gravel (0%), sand (30%), fines (70%).	Pushed a Shelby from 21-22' bgs.	3/8" bentonite chips
25.0				Boring terminated at 22 ft bgs.		

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-14D</b>	SHEET 1 OF 3
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Alpine Place  
 ELEVATION : 4416.4 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7441874.25, E 1541345.32      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 5.5 ft bgs      START : 7/21/2018      END : 7/22/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0.0				No recovery from 0-5' bgs.	Hand auger to 5' bgs.	<p>3 ft x 3 ft concrete pad with 8" steel vault Concrete</p>
5.0				<b>SILTY CLAY (CL)</b> yellowish brown (10YR 5/6), wet, soft, medium-low plasticity. Gravel (0%), sand (10%), fines (90%).		
10.0				<b>SILT WITH SAND (ML)</b> gray (5Y 5/1), wet, firm, nonplastic. Gravel (0%), sand (20%), fines (80%).  Occasional organics.		3/8" bentonite chips
15.0				<b>LEAN CLAY (CL)</b> gray (5Y 5/1), wet, firm, medium plasticity. Gravel (0%), sand (10%), fines (90%).		
20.0				<b>SILT WITH SAND (ML)</b> gray (5Y 5/1), wet, firm, nonplastic. Gravel (0%), sand (20%), fines (80%).		
25.0				<b>LEAN CLAY (CL)</b> gray (5Y 5/1), wet, very soft, medium-low plasticity. Gravel (0%), sand (10%), fines (90%).		
				<b>SILT WITH SAND (ML)</b> gray (5YR 5/1), wet, firm, nonplastic. Occasional sand layers up to 2" thick. Gravel (0%), sand (25%), fines (75%).		2" schedule 40 PVC

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-14D</b>	SHEET 2 OF 3
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)	LOCATION : Alpine Place		
ELEVATION : 4416.4 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic		
COORDINATES : N 7441874.25, E 1541345.32	DRILLING METHOD AND EQUIPMENT : Sonic 4x6		
WATER LEVEL : 5.5 ft bgs	START : 7/21/2018	END : 7/22/2018	LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0						
10.0				4" sand layer at 26' bgs. <b>LEAN CLAY (CL)</b> dark yellowish brown (10YR 4/4), moist, stiff to very stiff, medium plasticity. Gravel (0%), sand (5%), fines (95%).		
30						
35	10.0			<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> dark yellowish brown (10YR 4/4), moist, firm to stiff, medium plasticity. Gravel (20%), sand (9%), fines (71%).	Gradational contact.	
40				<b>GRAVELLY CLAY WITH SAND (CL)</b> dark yellowish brown (10YR 4/4), moist, firm, medium plasticity. Gravel (30%), sand (15%), fines (45%).	Gradational contact.	
40				<b>CLAYEY GRAVEL WITH SAND (GC)</b> dark yellowish brown (10YR 4/4), moist, dense, well-graded sand and gravel. Gravels up to 3". Subrounded gravels. Gravel (50%), sand (30%), fines (20%).	Gradational contact.	
40				<b>SILTY GRAVEL WITH SAND (GM)</b> dark yellowish brown (10YR 4/4), wet, medium dense, well-graded sand and gravel. Gravels up to 2". Subrounded gravels. Gravel (50%), sand (35%), fines (15%).		
40				<b>SANDY LEAN CLAY WITH GRAVEL (CL)</b> dark yellowish brown (10YR 4/4), moist, stiff, medium plasticity. Gravel (10%), sand (30%), fines (60%).		
45	10.0			<b>CLAYEY GRAVEL WITH SAND (GC)</b> yellowish brown / moderate yellowish brown (10YR 5/4), moist, dense, well-graded sand and gravel.		
45				<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> reddish brown (2.5YR 4/4), moist, stiff, medium-high plasticity. Gravel (10%), sand (15%), fines (75%).	Gradational contact.	
50				<b>CLAYEY GRAVEL WITH SAND (GC)</b> dark yellowish brown (10YR 4/4), wet, dense, well-graded	Gradational contact.	
						3/8" bentonite chips
						2" schedule 40 PVC
						20/40 silica sand

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-14D</b>	SHEET <b>3</b> OF <b>3</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Alpine Place  
 ELEVATION : 4416.4 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7441874.25, E 1541345.32      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 5.5 ft bgs      START : 7/21/2018      END : 7/22/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
55	10.0			sand and gravel. Gravels up to 2". Rounded gravels. Gravel (50%), sand (20%), fines (30%).		
				<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> reddish brown (2.5YR 4/4), moist, very stiff, medium-high plasticity. Gravel (10%), sand (10%), fines (80%).		
60				<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown (2.5YR 4/4), wet, dense, well-graded sand and gravel. Gravels up to 3". Subrounded gravels. Gravel (40%), sand (30%), fines (30%).		
65	5.0			<b>LEAN CLAY (CL)</b> reddish brown (2.5YR 4/4), moist, stiff to very stiff, medium-high plasticity. Gravel (0%), sand (5%), fines (95%).		
				Boring terminated at 65 ft bgs.	Pushed a Shelby from 65-66' bgs.	
70						
75						

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-14S</b>	SHEET 1 OF 1
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Alpine Place  
 ELEVATION : 4416.1 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7441871.66, E 1541340.01      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 5.0 ft bgs      START : 7/23/2018      END : 7/23/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0.0				No recovery from 0-5' bgs.	Hand auger to 5' bgs.	<p>3 ft x 3 ft concrete pad with 8" steel vault            Concrete            2" schedule 40 PVC            Bentonite pellets            0.010" slotted screen, 2" sch. 40 PVC            20/40 silica sand</p>
5.0				<b>LEAN CLAY (CL)</b> black (10YR 2/1), moist to wet, firm, medium plasticity. Some organics. Gravel (0%), sand (20%), fines (80%).		
5.0				<b>SANDY SILT (ML)</b> gray (5Y 5/1), wet, firm, nonplastic. Occasional roots. Gravel (0%), sand (30%), fines (70%).		
10.0				<b>SILT WITH SAND (ML)</b> gray (5Y 5/1), wet, firm, nonplastic. Occasional roots.		
15.0				Boring terminated at 15 ft bgs.		

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-15D</b>	SHEET 1 OF 4
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Belmont Ave. near McClelland St.

ELEVATION : 4347.9 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic

COORDINATES : N 7441412.77, E 1540283.36      DRILLING METHOD AND EQUIPMENT : Sonic 4x6

WATER LEVEL : 48.0 ft bgs      START : 7/19/2018      END : 7/19/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0.0				No recovery from 0-5' bgs.	Hand auger to 5' bgs.	<p>3 ft x 3 ft concrete pad with 8" steel vault</p> <p>Concrete</p>
5.0		PID = 0.2		<b>LEAN CLAY (CL)</b> olive (5Y 5/3), very moist, firm, medium-high plasticity. Some rust streaking. Occasional silt layers. Gravel (0%), sand (5%), fines (95%).		
10.0		PID = 0.4		One thin (<2") wet layer at 19' bgs. <b>SILTY SAND (SM)</b> brown (7.5YR 5/4), moist, dense, poorly-graded fine sand. Gravel (0%), sand (65%), fines (35%).		
15.0	10.0			<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 5/3), moist, dense, well-graded sand and gravel. Occasional cobbles. Angular to subangular gravels. Gravel (50%), sand (25%), fines (25%).		Bentonite pellets
20.0						2" schedule 40 PVC
25.0		PID = 0.0				

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-15D</b>	SHEET <b>2</b> OF <b>4</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Belmont Ave. near McClelland St.  
 ELEVATION : 4347.9 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7441412.77, E 1540283.36      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 48.0 ft bgs      START : 7/19/2018      END : 7/19/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
10.0						
30		PID = 0.0				
35	10.0					Bentonite pellets
40				6" clay layer at 40.5' bgs. <b>SILTY GRAVEL WITH SAND (GM)</b> brown (7.5YR 5/3), moist, very dense, well-graded sand and gravel. Gravels up to 3". Angular to subangular gravels. Gravel (50%), sand (30%), fines (20%).		2" schedule 40 PVC
45	8.0					
50		PID = 0.0		2" clay layer at 49.5' bgs.		

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-15D</b>	SHEET 3 OF 4
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Belmont Ave. near McClelland St.

ELEVATION : 4347.9 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic

COORDINATES : N 7441412.77, E 1540283.36      DRILLING METHOD AND EQUIPMENT : Sonic 4x6

WATER LEVEL : 48.0 ft bgs      START : 7/19/2018      END : 7/19/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
55	10.0	PID = 0.0		<b>LEAN CLAY (CL)</b> brown (7.5YR 4/4), moist to wet, firm, medium-high plasticity. Gravel (0%), sand (5%), fines (95%).  4" sandy clay layer at 49.5' bgs.  Occasional silt layers.	Water table appeared to be at 50' bgs in the soil. Left the boring open from 50-60' bgs, water came up to 48' bgs.	
60		PID = 0.0		<b>WELL GRADED SAND WITH SILT (SW-SM)</b> brown (7.5YR 4/4), wet, loose. Gravel (5%), sand (85%), silt (10%). <b>SANDY SILT (ML)</b> brown (7.5YR 4/4), wet, firm, nonplastic. Gravel (0%), sand (40%), fines (60%).		Bentonite pellets
65	10.0	PID = 0.0		<b>LEAN CLAY (CL)</b> brown (7.5YR 4/4), moist, firm to stiff, medium plasticity. Gravel (0%), sand (5%), fines (95%). <b>SILTY GRAVEL WITH SAND (GM)</b> brown (7.5YR 4/4), wet, dense, well-graded sand and gravel. Gravels up to 2". Subrounded gravels. Gravel (50%), sand (30%), fines (20%).		2" schedule 40 PVC
70		PID = 0.0		<b>LEAN CLAY WITH SAND (CL)</b> brown (7.5YR 4/4), wet, firm, medium plasticity, poorly-graded	Lost the core from 70-80' bgs. Redrilled and recovered the core with an auger bit.	20/40 silica sand 0.010" slotted screen, 2" sch. 40 PVC
75	6.5					

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-15D</b>	SHEET 4 OF 4
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Belmont Ave. near McClelland St.  
 ELEVATION : 4347.9 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7441412.77, E 1540283.36      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 48.0 ft bgs      START : 7/19/2018      END : 7/19/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
				fine sand. Gravel (0%), sand (20%), fines (80%).		
	6.5			<b>SILTY GRAVEL WITH SAND (GM)</b> brown (7.5YR 4/4), wet, loose, well-graded sand and gravel. Gravel up to 1 1/2". Subrounded to rounded gravels. Gravel (45%), sand (30%), fines (15%).		
80				<b>SILTY CLAY (CL)</b> brown (7.5YR 4/4), moist, stiff, low plasticity. Gravel (0%), sand (10%), fines (90%).		3/8" bentonite chips
	10.0			6" sand layer at 84.5' bgs.  6" sand layer at 87' bgs.		
85				<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/4), wet, dense, well-graded sand, poorly-graded gravel. Gravel up to 1". Gravel (50%), sand (30%), fines (20%).		
	5.0			<b>LEAN CLAY (CL)</b> brown (7.5YR 4/4), moist to wet, firm to stiff, medium plasticity. Sand layers throughout. Gravel (0%), sand (10%), fines (90%). 6" sand layer at 90.8' bgs.  4" sand layer at 93.2' bgs.		
90						
95				Boring terminated at 95 ft bgs.	Pushed a Shelby from 95-96' bgs.	
100						

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-15S</b>	SHEET 1 OF 3
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Belmont Ave. near McClelland St.  
 ELEVATION : 4347.5 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7441412.96, E 1540276.46      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 45.0 ft bgs      START : 7/20/2018      END : 7/20/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0.0				No recovery from 0-5' bgs.	Hand auger to 5' bgs.	<p>3 ft x 3 ft concrete pad with 8" steel vault Concrete</p>
5.0		PID = 0.2		<b>LEAN CLAY (CL)</b> olive (5Y 5/3), moist to very moist, firm to stiff, medium-high plasticity. Frequent rust streaking. Occasional silt layers. Gravel (0%), sand (5%), fines (95%).		
10.0		PID = 0.4		<b>SILTY SAND (SM)</b> brown (7.5YR 5/4), moist, dense, poorly-graded fine sand, nonplastic. Gravel (0%), sand (65%), fines (35%).		3/8" bentonite chips
15.0	10.0			<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 5/3), moist, dense, well-graded sand and gravel. Occasional cobbles. Angular to subangular gravels and cobbles. Gravel (50%), sand (25%), fines (25%).		2" schedule 40 PVC
20.0				<b>SILTY SAND (SM)</b> brown (7.5YR 5/4), moist, dense, poorly-graded fine sand, nonplastic. Gravel (0%), sand (65%), fines (35%).		
25.0	10.0	PID = 0.1		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 5/3), moist, dense, well-graded sand and gravel. Occasional cobbles. Angular to subangular gravels and cobbles. Gravel (50%), sand (25%), fines (25%).		

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-15S</b>	SHEET 2 OF 3
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Belmont Ave. near McClelland St.

ELEVATION : 4347.5 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic

COORDINATES : N 7441412.96, E 1540276.46      DRILLING METHOD AND EQUIPMENT : Sonic 4x6

WATER LEVEL : 45.0 ft bgs      START : 7/20/2018      END : 7/20/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
10.0				<b>LEAN CLAY (CL)</b> olive (5Y 5/3), wet, soft, medium-high plasticity. Gravel (0%), sand (5%), fines (95%).		
30		PID = 0.2		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 5/3), moist to dry, very dense, well-graded sand and gravel. Subrounded gravels. Gravel (50%), sand (25%), fines (25%).		
35	10.0			<b>SANDY LEAN CLAY (CL)</b> brown (7.5YR 5/3), moist, soft, poorly-graded fine sand, medium plasticity. Gravel (20%), sand (25%), fines (55%).		
40		PID = 0.0		<b>SILTY GRAVEL WITH SAND (GM)</b> brown (7.5YR 5/3), very moist, dense, well-graded sand and gravel. Gravels up to 3". Angular to subangular gravels. Gravel (50%), sand (30%), fines (20%).		3/8" bentonite chips
45	10.0	PID = 0.2		<b>SILTY CLAY WITH SAND (CL)</b> brown (7.5YR 5/3), wet, soft, low plasticity. Gravel (0%), sand (20%), fines (80%).		2" schedule 40 PVC
50		PID = 0.0		<b>SANDY LEAN CLAY (CL)</b> brown (7.5YR 5/3), wet, soft, medium-low plasticity. Gravel	Gradational contact.	

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-15S</b>	SHEET <b>3</b> OF <b>3</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Belmont Ave. near McClelland St.

ELEVATION : 4347.5 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic

COORDINATES : N 7441412.96, E 1540276.46      DRILLING METHOD AND EQUIPMENT : Sonic 4x6

WATER LEVEL : 45.0 ft bgs      START : 7/20/2018      END : 7/20/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
5.0				(10%), sand (25%), fines (65%). <b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> brown (7.5YR 5/3), wet to moist, firm, medium plasticity. Gravel (10%), sand (10%), fines (80%).		<p>20/40 silica sand</p> <p>0.010" slotted screen, 2" sch. 40 PVC</p> <p>3/8" bentonite chips</p>
55		PID = 0.1		<b>SILTY GRAVEL WITH SAND (GM)</b> brown (7.5YR 5/3), wet, dense, well-graded sand and gravel. Subrounded to subangular gravels. Gravel (60%), sand (25%), fines (15%).		
				<b>LEAN CLAY (CL)</b> brown (7.5YR 5/3), moist, stiff, medium plasticity. Gravel (60%), sand (25%), fines (15%).		
60		PID = 0.0		<b>SILTY SAND (SM)</b> brown (7.5YR 5/3), wet, dense, poorly-graded fine sand. Gravel (0%), sand (60%), fines (40%).		
				<b>SILTY SAND WITH GRAVEL (SM)</b> brown (7.5YR 5/3), wet, dense, poorly-graded fine sand. Gravel (10%), sand (65%), fines (25%).		
				<b>SILTY SAND (SM)</b> brown (7.5YR 5/3), wet, dense, poorly-graded fine sand. Gravel (0%), sand (60%), fines (40%).		
65		PID = 0.0		<b>SANDY SILT (ML)</b> brown (7.5YR 5/3), wet, firm to stiff, nonplastic. Gravel (0%), sand (40%), fines (60%).		
				Boring terminated at 65 ft bgs.		
70						
75						

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-16D</b>	SHEET 1 OF 3
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Elizabeth Street  
 ELEVATION : 4455.2 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7443053.1, E 1541188.6      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 10.0 ft bgs      START : 7/18/2018      END : 7/18/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0.0				No recovery from 0-5' bgs.	Hand auger to 5' bgs.	3 ft x 3 ft concrete pad with 8" steel vault Concrete
5.0		PID = 0.2		<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown / moderate brown (5YR 4/4), dry, dense, well-graded sand and gravel. Gravels up to 3". Subangular to subrounded gravels. Frequent cobbles/boulders. Gravel (45%), sand (30%), fines (25%).  Becomes moist at 8' bgs.		
10.0		PID = 0.2		<b>INTERBEDDED SANDY SILT AND SILTY SAND</b> Sandy silt - reddish brown (5YR 4/4), wet, firm, nonplastic. Gravel (0%), sand (40%), fines (60%). Silty sand - reddish brown (5YR 4/4), wet, medium dense, poorly-graded fine sand, nonplastic fines. Gravel (0%), sand (60%), fines (40%). Total - Gravel (0%), sand (50%), fines (50%).  3" clay layer at 17' bgs. 6" clay layer at 18' bgs.		3/8" bentonite chips
15.0		PID = 0.0		<b>CLAYEY SAND WITH GRAVEL (SC)</b> reddish brown / moderate brown (5YR 4/4), wet, dense, well-graded sand and gravel. Gravel (30%), sand (40%), fines (30%).	Poor recovery from 20-30' bgs.	2" schedule 40 PVC
20.0		PID = 0.1				
25.0		PID = 0.1				

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-16D</b>	SHEET 2 OF 3
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Elizabeth Street

ELEVATION : 4455.2 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic

COORDINATES : N 7443053.1, E 1541188.6      DRILLING METHOD AND EQUIPMENT : Sonic 4x6

WATER LEVEL : 10.0 ft bgs      START : 7/18/2018      END : 7/18/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
5.0				<b>SANDY LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), wet, soft, medium plasticity, fine-grained sands. Gravel (0%), sand (35%), fines (65%).		
30		PID = 0.1		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), wet, medium dense, well-graded sand and gravel. Gravels up to 2". Subrounded gravels. Gravel (45%), sand (30%), fines (25%).		
				<b>SANDY LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), wet, soft, medium plasticity, fine-grained sand. Gravel (0%), sand (35%), fines (65%).		
				<b>CLAYEY SAND WITH GRAVEL (SC)</b> reddish brown / moderate brown (5YR 4/4), wet, medium dense, poorly-graded fine gravel, well-graded sand. Gravels up to 1".		
35	10.0	PID = 0.0		<b>LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), wet, firm to stiff, medium plasticity. Gravel (0%), sand (10%), fines (90%).		
				<b>INTERBEDDED SANDY SILT AND SILTY SAND</b> Sandy Silt - reddish brown (5YR 4/4), wet, firm, nonplastic, fine-grained sand. Gravel (0%), sand (40%), fines (60%). Silty Sand - reddish brown (5YR 4/4), wet, medium dense, poorly-graded fine sand. Gravel (0%), sand (60%), fines (40%). Total - Gravel (0%), sand (50%), fines (50%).		3/8" bentonite chips
40		PID = 0.0		<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> reddish brown / moderate brown (5YR 4/4), moist to wet, firm to stiff, medium plasticity. Gravel (10%), sand (10%), fines (80%). Changes color to olive (5Y 5/3) at 40' bgs.		2" schedule 40 PVC
45	10.0	PID = 0.2		<b>LEAN CLAY (CL)</b> olive (5Y 5/3), moist, stiff, medium-high plasticity, rust streaks throughout. Gravel (0%), sand (5%), fines (95%). Becomes less moist, very stiff.	Gradational contact.	
50		PID = 0.3				

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-16D</b>	SHEET <b>3</b> OF <b>3</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)	LOCATION : Elizabeth Street		
ELEVATION : 4455.2 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic		
COORDINATES : N 7443053.1, E 1541188.6	DRILLING METHOD AND EQUIPMENT : Sonic 4x6		
WATER LEVEL : 10.0 ft bgs	START : 7/18/2018	END : 7/18/2018	LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
55	10.0	PID = 0.0		Wet, silty layers from 54-56' bgs.		3/8" bentonite chips 2" schedule 40 PVC
60		PID = 0.0		<b>SILTY SAND (SM)</b> brown (7.5YR 5/4), wet, dense, poorly-graded fine sand. Gravel (0%), sand (55%), fines (45%).	Pushed a Shelby tube from 60-62' bgs.	
65	10.0	PID = 0.2		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 5/4), wet, dense, well-graded sand and gravel. Gravels up to 3". Gravel (50%), sand (25%), fines (25%).		20/40 silica sand 0.010" slotted screen, 2" sch. 40 PVC
70	3.0	PID = 0.0				
				Boring terminated at 73 ft bgs.		
75						

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-16S</b>	SHEET <b>1</b> OF <b>1</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Elizabeth Street  
 ELEVATION : 4455.1 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7443049.3, E 1541188.62      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 10.0 ft bgs      START : 7/18/2018      END : 7/18/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0.0				No recovery from 0-5' bgs.	Hand auger to 5' bgs.	<p>3 ft x 3 ft concrete pad with 8" steel vault Concrete Bentonite pellets 2" schedule 40 PVC 20/40 silica sand 0.010" slotted screen, 2" sch. 40 PVC</p>
5.0		PID = 0.2		<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown / moderate brown (5YR 4/4), dry, dense, well-graded sand and gravel. Gravels up to 3". Subangular to subrounded gravels. Frequent cobbles/boulders. Gravel (45%), sand (30%), fines (25%).  Becomes moist at 8.5' bgs.		
10.0		PID = 0.1		<b>INTERBEDDED SANDY SILT AND SILTY SAND</b> <u>Sandy Silt</u> - reddish brown (5YR 4/4), wet, firm, nonplastic. Gravel (0%), sand (40%), fines (60%). <u>Silty Sand</u> - reddish brown (5YR 4/4), wet, medium dense, poorly-graded fine sand, nonplastic fines. Gravel (0%), sand (60%), fines (40%).  Total - Gravel (0%), sand (50%), fines (50%).		
15.0	10.0	PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), wet, dense, well-graded sand and gravel, some cobbles.  1" clay layer.		
20.0		PID = 0.0		Boring terminated at 20 ft bgs.		
25.0						

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-17D</b>	SHEET 1 OF 3
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Gilmer Drive  
 ELEVATION : 4465.9 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7441762.22, E 1542159.87      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 6.5 ft bgs      START : 7/24/2018      END : 7/24/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0.0				No recovery from 0-5' bgs.	Hand auger to 5' bgs.	3 ft x 3 ft concrete pad with 8" steel vault Concrete
5.0		PID = 0.0		<b>SANDY LEAN CLAY (CL)</b> dark gray / olive gray (5Y 4/1), moist, soft, medium plasticity. Occasional subrounded gravels up to 2". Occasional cobble up to 4". Gravel (5%), sand (35%), fines (65%).		
10.0		PID = 0.0		<b>SILTY CLAY WITH GRAVEL (CL)</b> gray (5Y 5/1), moist to wet, soft, medium plasticity. Subrounded gravels up to 2". Gravel (20%), sand (5%), fines (75%).  4" black band of organic material.		3/8" bentonite chips
15.0	8.0	PID = 0.3		6" cobble.		2" schedule 40 PVC
20.0		PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (10YR 4/3), wet, subrounded to subangular gravels. Gravel up to 3". Gravel (60%), sand (10%), fines (30%).		
25.0	10.0			<b>LEAN CLAY (CL)</b> dark yellowish brown (10YR 4/4), dry, stiff, medium plastic, occasional subrounded gravels up to 2". Gravel (5%), sand (10%), fines (85%).		

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-17D</b>	SHEET 2 OF 3
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Gilmer Drive  
 ELEVATION : 4465.9 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7441762.22, E 1542159.87      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 6.5 ft bgs      START : 7/24/2018      END : 7/24/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
10.0				<b>CLAYEY SAND WITH GRAVEL (SC)</b> brown (10YR 4/3), wet, subrounded, poorly-graded gravel. Gravel up to 1". Gravel (30%), sand (40%), fines (30%).		
30		PID = 0.0		<b>LEAN CLAY (CL)</b> brown (10YR 4/3), wet, firm, medium plastic. Gravel (5%), sand (10%), fines (85%).		
35	10.0	PID = 0.0		<b>CLAYEY SAND WITH GRAVEL (SC)</b> brown (10YR 4/3), wet, subrounded gravel up to 2". Gravel (30%), sand (50%), fines (20%).		
40		PID = 0.1		<b>SILTY GRAVEL WITH SAND (GM)</b> brown (10YR 4/3), wet, subrounded gravels up to 2", cobbles up to 6". Gravel (50%), sand (20%), fines (30%).		3/8" bentonite chips
40		PID = 0.1		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (10YR 4/3), wet, subangular gravels up to 2", cobbles up to 6". Gravel (55%), sand (15%), fines (30%).		2" schedule 40 PVC
45		PID = 0.0		<b>LEAN CLAY (CL)</b> brown (10YR 4/3), moist, stiff, medium-high plasticity.		
45	10.0	PID = 0.0		<b>GRAVELLY LEAN CLAY (CL)</b> brown (10YR 4/3), moist, stiff, medium plasticity. Subangular gravels up to 2". Gravel (30%), sand (10%), fines (60%).		
50		PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (10YR 4/3), moist to wet, subangular gravel up to 2", occasional cobbles up to 6". Gravel (50%), sand (30%), fines (20%).		20/40 silica sand 0.010" slotted screen, 2" sch. 40 PVC

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-17D</b>	SHEET <b>3</b> OF <b>3</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)	LOCATION : Gilmer Drive		
ELEVATION : 4465.9 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic		
COORDINATES : N 7441762.22, E 1542159.87	DRILLING METHOD AND EQUIPMENT : Sonic 4x6		
WATER LEVEL : 6.5 ft bgs	START : 7/24/2018	END : 7/24/2018	LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
55	10.0	PID = 0.5		<b>LEAN CLAY (CL)</b> brown (10YR 4/3), moist, stiff, medium-low plasticity. Gravel (10%), sand (5%), fines (85%).		<p>20/40 silica sand</p> <p>0.010" slotted screen, 2" sch. 40 PVC</p> <p>3/8" bentonite chips</p>
60		PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> dark yellowish brown (10YR 4/4), wet, subangular, gravel up to 2". Cobbles up to 4". Gravel (40%), sand (30%), fines (30%).		
65	10.0	PID = 0.0		<b>LEAN CLAY WITH SAND (CL)</b> dark yellowish brown (10YR 4/4), moist, stiff, medium plasticity. Occasional subrounded gravels up to 1.5". Gravel (5%), sand (20%), fines (75%).  4" pulverized cobble at 63' bgs.  Becomes wet at 66' bgs.  4" cobble at 67' bgs.		
		PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> dark yellowish brown (10YR 4/4), wet, subangular gravel up to 2". Gravel (50%), sand (20%), fines (30%).		
70		PID = 0.0		<b>LEAN CLAY WITH SAND (CL)</b> dark yellowish brown (10YR 4/4), wet, stiff, low plasticity. Gravel (0%), sand (20%), fines (80%). Boring terminated at 70 ft bgs.		
75						

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-17S</b>	SHEET <b>1</b> OF <b>1</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Gilmer Drive  
 ELEVATION : 4465.7 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7441761.45, E 1542156.19      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 6.5 ft bgs      START : 7/25/2018      END : 7/25/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0.0				No recovery from 0-5' bgs.	Hand auger to 5' bgs.	<p>3 ft x 3 ft concrete pad with 8" steel vault Concrete Bentonite pellets 2" schedule 40 PVC 20/40 silica sand 0.010" slotted screen, 2" sch. 40 PVC</p>
5.0		PID = 0.8		<b>SANDY LEAN CLAY (CL)</b> dark gray / brownish gray (5YR 4/1), soft, medium-low plasticity, moist. Gravel (5%), sand (25%), fines (70%). Becomes wet at 6.5' bgs.		
10.0		PID = 0.0				
15.0		PID = 0.0		Color change to dark yellowish brown (10YR 3/4).  Occasional 4" cobbles.		
20.0		PID = 0.0				
				Boring terminated at 22 ft bgs.		

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-18</b>	SHEET 1 OF 5
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot

ELEVATION : 4559.0 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic

COORDINATES : N 7443344.56, E 1542789.68      DRILLING METHOD AND EQUIPMENT : Sonic 4x6

WATER LEVEL : 80.0 ft bgs      START : 6/22/2018      END : 6/22/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0.0				No recovery from 0-5' bgs.	Hydrovac to 5' bgs	2 ft x 2 ft concrete pad with 8" steel vault
5.0		PID = 0.4		<b>LEAN CLAY WITH SAND (CL)</b> dark brown (7.5YR 3/3), moist, stiff, medium plasticity. Gravel (10%), sand (15%), fines (75%).	Fill material	Concrete
5.0				<b>SILTY SAND (SM)</b> yellowish brown / moderate yellowish brown (10YR 5/4), moist, medium dense, poorly-graded fine sand. Gravel (0%), sand (60%), fines (40%).	Fill material-native contact	
10.0		PID = 0.0		<b>SILTY CLAY WITH SAND (CL)</b> yellowish brown / moderate yellowish brown (10YR 5/4), moist, firm to stiff, medium to low plasticity. Gravel (0%), sand (20%), fines (80%).		Bentonite grout
10.0				<b>SILTY SAND WITH CLAY LAYERS (SM)</b> yellowish brown / moderate yellowish brown (10YR 5/4), moist, dense, poorly-graded fine sand. Gravel (0%), sand (60%), fines (40%).		
15.0	7.0	PID = 0.0		<b>SILTY GRAVEL WITH SAND (GM)</b> dark brown (7.5YR 3/3), dry, dense, well graded sand and gravel, subangular gravels. Gravel (50%), sand (30%), fines (20%).		
20.0		PID = 0.0		<b>LEAN CLAY WITH SAND (CL)</b> brown (7.5YR 5/3), moist, firm, medium to high plasticity. Gravel (10%), sand (15%), fines (75%).		
25.0		PID = 6.7		<b>SILTY GRAVEL WITH SAND (GM)</b> brown (10YR 5/3), dry, dense, well-graded sand and gravel,		2" schedule 40 PVC

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-18</b>	SHEET <b>2</b> OF <b>5</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot  
 ELEVATION : 4559.0 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7443344.56, E 1542789.68      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 80.0 ft bgs      START : 6/22/2018      END : 6/22/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0 - 10.0	10.0			subangular gravel. Gravel (65%), sand (20%), fines (15%).		
10.0 - 30.0		PID = 3.2		Thin clay layer at 28.5' bgs.		
30.0 - 35.0		PID = 1.9		<b>LEAN CLAY (CL)</b> 6" layer cemented clay, dry, very hard.		
35.0 - 40.0	10.0	PID = 1.3		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown (5YR 4/3), moist, very dense, well-graded sand and gravel, subangular to subrounded gravels, occasional cobbles. Gravel (50%), sand (25%), fines (25%).		
40.0 - 45.0		PID = 0.5		<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown (5YR 4/3), moist to dry, very dense, well-graded sand and gravel, subangular gravels. Gravel (60%), sand (25%), fines (15%).		Bentonite grout
45.0 - 50.0	10.0	PID = 0.6		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), moist to dry, very dense, well-graded sand and gravel, subangular gravels. Gravel (50%), sand (25%), fines (25%).		2" schedule 40 PVC
		PID = 2.8				
		PID = 2.7				
		PID = 2.7				
		PID = 6.5				

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-18</b>	SHEET <b>3</b> OF <b>5</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot  
 ELEVATION : 4559.0 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7443344.56, E 1542789.68      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 80.0 ft bgs      START : 6/22/2018      END : 6/22/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
55	10.0	PID = 0.5 PID = 0.2 PID = 0.0		<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown / moderate brown (5YR 4/4), moist to dry, very dense, well-graded sand and gravel, subrounded to subangular gravels up to 3". Gravel (60%), sand (25%), fines (15%).		
60		PID = 0.1 PID = 4.8				
65	10.0	PID = 4.2 PID = 3.0				Bentonite grout 2" schedule 40 PVC
70		PID = 2.5 PID = 1.7		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown (5YR 4/3), dry, very dense, well-graded sand and gravel, subangular to subrounded gravels. Gravel (55%), sand (25%), fines (20%).		
75	10.0	PID = 0.4				Bentonite pellets

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-18</b>	SHEET <b>4</b> OF <b>5</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot  
 ELEVATION : 4559.0 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7443344.56, E 1542789.68      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 80.0 ft bgs      START : 6/22/2018      END : 6/22/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION	COMMENTS	WELL DETAILS
				SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	
80.0	10.0	PID = 3.8		<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown / moderate brown (5YR 4/4), dry, very dense, well-graded sand and gravel, subangular gravels up to 3", occasional cobbles. Gravel (60%), sand (25%), fines (15%).		<p>Bentonite pellets</p> <p>20/40 silica sand</p> <p>0.010" slotted screen, 2" sch. 40 PVC</p> <p>3/8" bentonite chips</p>
85.0	10.0	PID = 0.8		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), wet, dense, well-graded sand and gravel, subangular to subrounded gravels up to 3". Gravel (60%), sand (20%), fines (20%).		
90.0		PID = 0.1		<b>CLAYEY SAND (SC)</b> reddish brown / moderate brown (5YR 4/4), wet, dense, well-graded gravel. Gravel (2%), sand (68%), fines (30%).		
90.0		PID = 0.3		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), wet, dense, well-graded sand and gravel, occasional cobbles. Gravel (50%), sand (25%), fines (25%).		
95.0	10.0	PID = 0.0		<b>SANDY LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), wet, soft, low to medium plasticity. Gravel (5%), sand (30%), fines (65%).		
100.0		PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), wet, dense, well-graded, occasional cobbles. Gravel (50%), sand (25%), fines (25%).		

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-18</b>	SHEET <b>5</b> OF <b>5</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot  
 ELEVATION : 4559.0 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7443344.56, E 1542789.68      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 80.0 ft bgs      START : 6/22/2018      END : 6/22/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
105	10.0	PID = 0.0  PID = 0.1  PID = 0.0		<p><b>SANDY LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), wet, soft, low to medium plasticity. Gravel (5%), sand (30%), fines (65%).</p> <p><b>CLAYEY GRAVEL WITH SAND (GC)</b> wet, dense, well-graded sand and gravel, occasional cobbles. Gravel (50%), sand (25%), fines (25%).</p> <p><b>SILTY SAND (SM)</b> reddish brown / moderate brown (5YR 4/4), dense, poorly-graded sand. Boring terminated at 110 ft bgs.</p>		<p>3/8" bentonite chips</p>
110		PID = 0.2				
115						
120						
125						

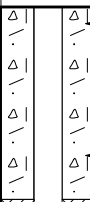

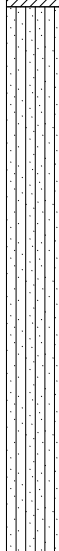
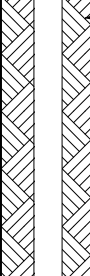


NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-19</b>	SHEET <b>1</b> OF <b>5</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot  
 ELEVATION : 4557.4 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7443109.99, E 1542791.39      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 85.5 ft bgs      START : 6/24/2018      END : 6/25/2018      LOGGER : J. Olsen

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0.0				No recovery from 0-5' bgs.	Hydrovac to 5' bgs.	 <p>2 ft x 2 ft concrete pad with 8" steel vault Concrete</p>
5.0				<b>SANDY LEAN CLAY WITH GRAVEL (CL)</b> very dark grayish brown (10YR 3/2), moist, firm, medium plasticity. Gravel (20%), sand (20%), fines (60%).	Fill material	
10.0				<b>SILTY SAND WITH SILT LAYERS (SM)</b> brown (7.5YR 4/4), dry, medium dense, poorly-graded fine sand, nonplastic silt layers up to 1" thick. Gravel (0%), sand (70%), fines (30%).	Fill material-native contact	 <p>Bentonite grout</p>
15.0	6.0	PID = 0.1				 <p>2" schedule 40 PVC</p>
20.0		PID = 0.0		<b>LEAN CLAY (CL)</b> dark yellowish brown (10YR 3/4), moist, firm, medium plasticity. Gravel (0%), sand (5%), fines (95%).		
25.0	10.0	PID = 0.0 PID = 0.1		Becomes dry, stiff		



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-19</b>	SHEET 2 OF 5
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot  
 ELEVATION : 4557.4 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7443109.99, E 1542791.39      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 85.5 ft bgs      START : 6/24/2018      END : 6/25/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
10.0		PID = 0.2		<b>CLAYEY GRAVEL WITH SAND (GC)</b> dark yellowish brown (10YR 3/4), dry, dense, well-graded gravels up to 3", occasional cobbles. Gravel (50%), sand (30%), fines (20%).		
30		PID = 0.0		<b>SILTY GRAVEL WITH SAND (GM)</b> brown (10YR 4/3), dry, very dense, well-graded sand and gravel, gravels up to 3", occasional cobbles. Gravel (60%), sand (25%), fines (15%).	Hard to drill	
35	10.0					Bentonite grout
40		PID = 1.0		More frequent cobbles.	Hard to drill	2" schedule 40 PVC
45	10.0	PID = 1.2				
		PID = 2.1				
50		PID = 0.4		Less frequent cobbles.		

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-19</b>	SHEET <b>3</b> OF <b>5</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot

ELEVATION : 4557.4 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic

COORDINATES : N 7443109.99, E 1542791.39      DRILLING METHOD AND EQUIPMENT : Sonic 4x6

WATER LEVEL : 85.5 ft bgs      START : 6/24/2018      END : 6/25/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
55	10.0	PID = 3.6		<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> brown (10YR 4/3), moist, stiff, medium to low plasticity. Gravel (10%), sand (10%), fines (80%).		
		PID = 1.3		<b>SILTY GRAVEL WITH SAND (GM)</b> brown (10YR 4/3), dry, very dense, well-graded sand and gravel, subangular gravels up to 3", occasional cobbles. Gravel (60%), sand (20%), fines (20%).  6" cobble at 55' bgs.		
60	10.0	PID = 0.9		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (10YR 4/3), moist, very dense, well-graded and and gravel, gravels up to 2". Gravel (50%), sand (20%), fines (30%).		
		PID = 0.3		<b>SILTY GRAVEL WITH SAND (GM)</b> brown (10YR 4/3), moist to dry, very dense, well-graded sand and gravel, gravels up to 1.5". Gravel (60%), sand (20%), fines (20%).		
		PID = 0.5		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (10YR 4/3), moist, very dense, well-graded sand and gravel, gravels up to 3". Gravel (50%), sand (20%), fines (30%).		Bentonite grout
65	10.0	PID = 0.1		<b>WELL GRADED GRAVEL WITH SILT AND SAND (GW)</b> dark brown (7.5YR 3/4), dry, dense, subrounded to subangular gravels up to 3". Gravel (50%), sand (40%), fines (10%).		
		PID = 0.5				2" schedule 40 PVC
70	10.0	PID = 0.1		<b>CLAYEY GRAVEL WITH SAND (GC)</b> dark brown (7.5YR 3/4), dry, very dense, subangular gravels up to 3", occasional cobbles. Gravel (50%), sand (30%), fines (20%).		
		PID = 0.0		<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown / moderate brown (5YR 4/4), dry, very dense, well-graded sand and gravel, subrounded to subangular gravels up to 3", occasional cobbles. Gravel (50%), sand (30%), fines (20%).		
75						

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-19</b>	SHEET <b>4</b> OF <b>5</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot  
 ELEVATION : 4557.4 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7443109.99, E 1542791.39      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 85.5 ft bgs      START : 6/24/2018      END : 6/25/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
10.0		PID = 0.2		<b>GRAVELLY CLAY WITH SAND (CL)</b> brown (7.5YR 4/4), moist, dense, well-graded sand and gravel, subrounded to subangular gravels up to 3". Gravel (35%), sand (10%), fines (55%).		
80		PID = 0.2				Bentonite pellets
		PID = 3.3				
		PID = 0.2		6" dry layer at 84' bgs.		
85	10.0	PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/4), wet, dense, well-graded sand and gravel, subrounded gravels up to 3". Gravel (50%), sand (30%), fines (20%).		
		PID = 0.0				0.010" slotted screen, 2" sch. 40 PVC
		PID = 0.0				
90		PID = 0.0				
		PID = 0.3				
		PID = 0.0		<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> brown (7.5YR 4/4), wet, firm, medium plasticity. Gravel (5%), sand (10%), fines (85%).		
95	10.0	PID = 0.0				20/40 silica sand
		PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/4), wet, dense, well-graded sand and gravel, subrounded gravels up to 2". Gravel (50%), sand (30%), fines (20%).		
		PID = 0.0		<b>LEAN CLAY WITH SAND (CL)</b> brown (7.5YR 4/4), wet, firm, medium plasticity. Gravel (0%), sand (10%), fines (90%).		
100		PID = 0.0				3/8" bentonite chips

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-19</b>	SHEET <b>5</b> OF <b>5</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot

ELEVATION : 4557.4 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic

COORDINATES : N 7443109.99, E 1542791.39      DRILLING METHOD AND EQUIPMENT : Sonic 4x6

WATER LEVEL : 85.5 ft bgs      START : 6/24/2018      END : 6/25/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
105	10.0			<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/4), wet, dense, well-graded sand and gravel, gravels up to 3". Gravel (50%), sand (20%), fines (30%).		 3/8" bentonite chips
110				Boring terminated at 110 ft bgs.		
115						
120						
125						

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-20D</b>	SHEET <b>1</b> OF <b>6</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot  
 ELEVATION : 4558.3 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442813.29, E 1542905.38      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 82.0 ft bgs      START : 6/18/2018      END : 6/19/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0.0				<b>GRAVELLY LEAN CLAY WITH SAND (CL)</b> dark brown, moist, firm, cobbles up to 6". Gravel (20%), sand (25%), fines (55%).	Fill material	 2 ft x 2 ft concrete pad with 8" steel vault Concrete
5.0				Becomes darker, more fines, less gravel, no cobbles. Gravel (15%), sand (25%), fines (60%).		
10.0				<b>SILT WITH SAND (ML)</b> brown, slightly moist, firm, low plasticity. Gravel (0%), sand (10%), fines (90%).	Fill material-native contact	Bentonite grout
15.0				<b>SILTY SAND (SM)</b> brown to reddish brown, medium density, moist, poorly-graded fine sand, thin (<1") clayey layers. Gravel (0%), sand (30%), fines (70%).		
20.0				<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown, moist, very dense. Gravel (65%), sand (20%), fines (15%). 12" boulder at 18.5' bgs.		2" schedule 40 PVC
25.0						

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-20D</b>	SHEET <b>2</b> OF <b>6</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot  
 ELEVATION : 4558.3 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442813.29, E 1542905.38      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 82.0 ft bgs      START : 6/18/2018      END : 6/19/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
10.0				<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown, moist. Gravel (60%), sand (20%), fines (20%).	Hard to drill Very hard to drill	
30		PID = 0.0		<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> dark brown, firm, moist, medium plasticity. Gravel (10%), sand (10%), fines (80%).		
35	10.0			<b>GRAVELLY CLAY WITH SAND (CL)</b> dark brown, firm, moist, medium plasticity, subrounded gravels up to 3". Gravel (35%), sand (10%), fines (55%).		
40		PID = 0.0		<b>SILTY GRAVEL WITH SAND (GM)</b> very dense, well-graded sand and gravel, slightly moist to dry, occasional cobbles, gravels up to 3", subrounded gravels. Gravel (60%), sand (20%), fines (20%).		Bentonite grout
45	10.0			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown, very dense, well-graded gravel, medium plasticity, dry, occasional cobbles, subrounded to subangular gravels up to 3". Gravel (60%), sand (20%), fines (20%).	Very hard to drill	2" schedule 40 PVC
50						

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-20D</b>	SHEET <b>3</b> OF <b>6</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot  
 ELEVATION : 4558.3 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442813.29, E 1542905.38      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 82.0 ft bgs      START : 6/18/2018      END : 6/19/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
55	10.0			<b>LEAN CLAY WITH GRAVEL AND SAND (CL)</b> reddish brown, moist, firm, medium plasticity. Gravel (10%), sand (10%), fines (80%).	Hard to drill	
				<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown, dry, very dense, well-graded sand and gravel, subrounded to subangular gravels. Gravel (50%), sand (25%), fines (25%).		
60		PID = 2.6		<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> reddish brown, moist, firm, medium plasticity. Gravel (10%), sand (10%), fines (80%).		Bentonite grout
65	10.0	PID = 0.0		<b>SILT WITH SAND (ML)</b> reddish brown, moist, firm, very low plasticity. Gravel (0%), sand (10%), fines (90%).		2" schedule 40 PVC
70		PID = 1.5		<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown, moist, very dense, well-graded gravels and sand, subrounded to subangular. Gravel (40%), sand (30%), fines (30%).		
	10.0			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown, moist, very dense, well-graded gravels and sand, subangular clasts. Gravel (40%), sand (30%), fines (30%).		
				6" cemented layer at 73' bgs.		
75				<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b>		

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-20D</b>	SHEET <b>4</b> OF <b>6</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot  
 ELEVATION : 4558.3 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442813.29, E 1542905.38      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 82.0 ft bgs      START : 6/18/2018      END : 6/19/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
80	10.0	PID = 0.0		reddish brown, moist, firm, medium plasticity, gravels up to 3". Gravel (15%), sand (10%), fines (75%). <b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown, moist to dry, well-graded sand and gravel, occasional cobbles. Gravel (50%), sand (25%), fines (25%).		
85	10.0	PID = 0.0		<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> reddish brown, very moist, medium to high plasticity, soft. Gravel (10%), sand (10%), fines (80%).	Gradational contact	
85	10.0	PID = 0.0		<b>SILTY SAND WITH GRAVEL (SM)</b> reddish brown, wet, dense, well-graded sand, poorly-graded gravel. Gravel (15%), sand (70%), fines (15%).  6" clay layer at 85' bgs.		Bentonite grout
90		PID = 0.0		<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> reddish brown, wet, soft, medium to high plasticity. Gravel (10%), sand (5%), fines (85%).		
90		PID = 0.0		<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> reddish brown, wet, dense, well-graded, subrounded to subangular gravels. Gravel (50%), sand (25%), fines (25%).		
90		PID = 0.0		<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> reddish brown, moist, stiff, medium plasticity. Gravel (10%), sand (10%), fines (80%).		2" schedule 40 PVC
95	10.0	PID = 0.3		<b>SILTY SAND WITH GRAVEL (SC-SM)</b> reddish brown, moist, dense, well-graded sand, subangular to subrounded gravels up to 1.5". Gravel (20%), sand (40%), fines (40%).		
95	10.0	PID = 0.3		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown, moist, dense, well-graded gravel, occasional cobbles.		
100		PID = 0.0		<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> reddish brown, moist, firm, gravels up to 1". Gravel (20%), sand (10%), fines (70%).		
100		PID = 0.0		<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown, dense, dry, well-graded, subangular to		

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-20D</b>	SHEET <b>5</b> OF <b>6</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot

ELEVATION : 4558.3 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic

COORDINATES : N 7442813.29, E 1542905.38      DRILLING METHOD AND EQUIPMENT : Sonic 4x6

WATER LEVEL : 82.0 ft bgs      START : 6/18/2018      END : 6/19/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
105	10.0	PID = 0.0		subrounded. Gravel (50%), sand (30%), fines (20%). <b>SANDY SILT (ML)</b> reddish brown, wet, firm to soft, low plasticity. Gravel (0%), sand (30%), fines (70%). <b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> reddish brown, very moist, soft to firm, rounded gravels. Gravel (5%), sand (5%), fines (90%).	Visible water No visible water	Bentonite grout 2" schedule 40 PVC
110		PID = 0.0		<b>GRAVELLY CLAY WITH SAND (CL)</b> reddish brown, very moist, firm, subrounded gravels up to 2". Gravel (50%), sand (30%), fines (20%). <b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown, wet, dense, well-graded sand and gravels, gravels up to 2". Gravel (50%), sand (30%), fines (20%).	Gradational contact	
115	10.0			<b>SILTY SAND WITH CLAY LAYERS (SM)</b> reddish brown, wet, dense, poorly-graded fine sand, clay layers up to 6" thick. Gravel (0%), sand (55%), fines (45%). <b>SILTY SAND WITH GRAVEL (SM)</b> reddish brown, wet, loose, well-graded sand, rounded gravels. Gravel (10%), sand (75%), fines (15%).	Looks like river bottom sediments.	Bentonite pellets
120		PID = 0.0		<b>SANDY LEAN CLAY WITH GRAVEL (CL)</b> reddish brown, moist to wet, firm, medium plasticity. <b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown, wet, dense, well-graded sand and gravel, subrounded gravels. Gravel (50%), sand (15%), fines (35%). Gravels become subrounded to subangular, elongated in general, cobbles up to 4".		20/40 silica sand 0.010" slotted screen, 2" sch. 40 PVC
125	10.0					

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-20D</b>	SHEET <b>6</b> OF <b>6</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot  
 ELEVATION : 4558.3 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442813.29, E 1542905.38      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 82.0 ft bgs      START : 6/18/2018      END : 6/19/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
10.0	10.0			Gravels become smaller sized in general (up to 2") with occasional cobble 3-4". Gravel (40%), sand (30%), fines (30%).		
130				<b>LEAN CLAY (CL)</b> reddish-brown, very moist, firm, medium plasticity, occasional small gravels (up to 0.75"). Gravel (5%), sand (5%), fines (90%).	Collected Shelby tube from 130-132' bgs.	
135	10.0			Gravels disappear. Gravel (0%), sand (5%), fines (95%).		
140				Occasional sandy layers.		
140				No sand layers.		
145	10.0			Thin gravel layer.		
150				Thin sandy, gravelly layer.		

Boring terminated at 150 ft bgs.

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-20S</b>	SHEET <b>1</b> OF <b>4</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot  
 ELEVATION : 4558.7 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442822.79, E 1542905.83      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 81.0 ft bgs      START : 6/21/2018      END : 6/21/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0.0				No recovery from 0-5' bgs.	Hydrovac to 5' bgs.	<p>2 ft x 2 ft concrete pad with 8" steel vault Concrete</p>
5.0				<b>SANDY LEAN CLAY WITH GRAVEL (CL)</b> dark brown (10YR 3/3), moist, stiff, medium plasticity, occasional cobbles and debris. Gravel (20%), sand (25%), fines (55%).	Fill material	
10.0		PID = 0.1		<b>SANDY SILT (ML)</b> reddish brown (5YR 5/4), moist, firm, low to non-plastic, very fine sand. Gravel (0%), sand (30%), fines (70%).	Fill material-native contact	Bentonite grout
15.0		PID = 0.3		<b>SILTY SAND (SM)</b> reddish brown (5YR 5/4), moist to dry, medium dense, poorly-graded fine sand, occasional clay layers. Gravel (0%), sand (55%), fines (45%).		
20.0		PID = 0.1		<b>LEAN CLAY (CL)</b> 6" clay layer. Gravel (0%), sand (10%), fines (90%).		
20.0		PID = 0.1		<b>CLAYEY SAND WITH GRAVEL (CL)</b> reddish brown (5YR 5/4), dense, moist to dry, well-graded sand and gravel, occasional cobbles. Gravel (25%), sand (40%), fines (35%).		
25.0		PID = 0.3		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown (5YR 5/4), dense, moist to dry, well-graded sand and gravel, occasional cobbles, subrounded to subangular gravels. Gravel (50%), sand (25%), fines (25%).	Gradational	2" schedule 40 PVC
	10.0	PID = 0.9				

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-20S</b>	SHEET 2 OF 4
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot  
 ELEVATION : 4558.7 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442822.79, E 1542905.83      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 81.0 ft bgs      START : 6/21/2018      END : 6/21/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
10.0		PID = 2.0				
30		PID = 3.7				
35	10.0	PID = 1.3		<b>SILTY SAND (SM)</b> reddish brown (5YR 5/4), dry, medium dense, poorly-graded. Gravel (0%), sand (65%), fines (35%).		
		PID = 0.4		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown (5YR 5/4), moist, very dense, well-graded sand and gravel, occasional cobbles. Gravel (50%), sand (25%), fines (25%).		
		PID = 0.5				
		PID = 0.1			Slightly cemented from 34-36' bgs	Bentonite grout
40		PID = 0.1		Color change to pale brown (10YR 6/3).		
		PID = 0.1		Color change to reddish brown (5YR 5/4). Becomes dry.		2" schedule 40 PVC
45	10.0	PID = 0.7				
		PID = 6.4				
		PID = 4.3			Slightly cemented from 45-46' bgs	
50						

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-20S</b>	SHEET <b>3</b> OF <b>4</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot  
 ELEVATION : 4558.7 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442822.79, E 1542905.83      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 81.0 ft bgs      START : 6/21/2018      END : 6/21/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
55	10.0	PID = 2.2		<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> reddish brown (5YR 5/4), dry, stiff, medium plasticity. Gravel (10%), sand (10%), fines (80%).	Very hard to drill	
		PID = 3.8		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown (5YR 5/4), dry, very dense, well graded sand and gravel, subangular gravels up to 3". Gravel (50%), sand (30%), fines (20%).		
60	10.0	PID = 2.8		PID = 1.7	Very hard to drill	
		PID = 0.9		<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> reddish brown (5YR 5/4), moist, firm, medium plasticity. Gravel (10%), sand (10%), fines (80%).		
		PID = 1.3		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown (5YR 5/4), moist, very dense, well graded, subangular gravels up to 3". Gravel (50%), sand (25%), fines (25%).		
65	10.0	PID = 0.5		<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> reddish brown (5YR 5/4), moist, firm, medium plasticity. Gravel (10%), sand (10%), fines (80%). 12" boulder. Gravel (100%).	Very hard to drill	
		PID = 0.7		<b>GRAVELLY CLAY WITH SAND (CL)</b> reddish brown (5YR 5/4), moist, firm, medium plasticity. Gravel (20%), sand (15%), fines (65%).		
70	10.0	PID = 1.4		<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown (5YR 5/4), moist to dry, very dense, well graded sand and gravel, occasional cobbles. Gravel (50%), sand (25%), fines (25%).	Very hard to drill	
		PID = 1.2		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown (5YR 5/4), moist to dry, very dense, well graded sand and gravel, subangular to subrounded gravels up to 3". Gravel (60%), sand (25%), fines (15%). 6" cobble at 71' bgs.		
75						Bentonite pellets

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-20S</b>	SHEET <b>4</b> OF <b>4</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : East High parking lot  
 ELEVATION : 4558.7 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442822.79, E 1542905.83      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 81.0 ft bgs      START : 6/21/2018      END : 6/21/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
75.5	10.0	PID = 0.7		6" cobble at 75.5' bgs.		Bentonite pellets
80		PID = 1.2		<b>SILTY SAND WITH GRAVEL (SM)</b> brown (10YR 4/3), loose, wet, well-graded sand and gravel, subrounded gravels. Gravel (20%), sand (65%), fines (15%).		20/40 silica sand
85	10.0	PID = 0.2		<b>SILTY SAND WITH SILT LAYERS (SM)</b> brown (10YR 4/3), loose, wet, poorly-graded fine sand, non-plastic, silt layers up to 4". Gravel (0%), sand (60%), fines (40%).		0.010" slotted screen, 2" sch. 40 PVC
		PID = 0.3		<b>SILTY SAND WITH GRAVEL (SM)</b> brown (10YR 4/3), loose, wet, well-graded sand and gravels, subrounded gravels. Gravel (20%), sand (65%), fines (15%).		
		PID = 0.4		<b>SANDY LEAN CLAY WITH GRAVEL (CL)</b> brown (10YR 4/3), firm, wet, medium to high plasticity. Gravel (5%), sand (40%), fines (55%).		
		PID = 0.8		<b>CLAYEY GRAVEL WITH SAND (GC)</b> wet at top, moist at bottom, dense, well-graded sand and gravel, subrounded to subangular gravels. Gravel (60%), sand (20%), fines (20%).		
90				Drilled to 90.8 during cleanout. This was not sampled or logged. Boring terminated at 90.8 ft bgs.		3/8" bentonite chips
95						
100						

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-21</b>	SHEET <b>1</b> OF <b>4</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : 800 South 1400 East  
 ELEVATION : 4563.5 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442343.27, E 1543130.2      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 70.0 ft bgs      START : 7/11/2018      END : 7/12/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0.0	0.0			No recovery from 0-3' bgs.	Hand auger to 3' bgs.	3 ft x 3 ft concrete pad with 8" steel vault Concrete
5				<b>LEAN CLAY WITH SAND (CL)</b> brown (7.5YR 4/4), moist, firm, medium-low plasticity. Gravel (0%), sand (15%), fines (85%).		
7.0				<b>SILTY GRAVEL WITH SAND (GM)</b> brown (7.5YR 4/4), moist, medium dense, well-graded sand and gravel, occasional cobbles, gravels up to 3". Gravel (60%), sand (20%), fines (20%).		
10				<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/4), moist, dense, well-graded sand and gravel, subrounded gravels, some cobbles. Gravel (50%), sand (20%), fines (30%).		Bentonite pellets
15	9.0			<b>SILTY GRAVEL WITH SAND (GM)</b> brown (7.5YR 4/4), moist, medium dense, well-graded sand and gravel, occasional cobbles, gravels up to 3". Gravel (60%), sand (20%), fines (20%).		
				<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/4), moist, dense, well-graded sand and gravel, gravel up to 2", subrounded gravels. Gravel (50%), sand (20%), fines (30%).		2" schedule 40 PVC
20		PID = 0.0		<b>SILTY GRAVEL WITH SAND (GM)</b> brown (7.5YR 4/4), dry, dense, well-graded sand and gravel. Gravel (50%), sand (25%), fines (25%).		
				<b>GRAVELLY CLAY WITH SAND (CL)</b> brown (7.5YR 4/4), moist, firm, medium plasticity, poorly-graded gravels, gravels up to 3/4". Gravel (20%), sand (10%), fines (70%).		
25	10.0					

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-21</b>	SHEET 2 OF 4
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : 800 South 1400 East  
 ELEVATION : 4563.5 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442343.27, E 1543130.2      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 70.0 ft bgs      START : 7/11/2018      END : 7/12/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
10.0				<b>LEAN CLAY (CL)</b> brown (7.5YR 5/4), moist, firm, medium plasticity. Gravel (0%), sand (5%), fines (95)%.		
30		PID = 0.0				Bentonite pellets
5.0				Increasing gravels. Gravel (10%), sand (5%), fines (85%).		
35		PID = 0.0		Cemented clay from 34.5-35' bgs.		
5.0				<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> brown (7.5YR 5/4), moist, firm, medium plasticity, gravels up to 1". Gravel (10%), sand (10%), fines (80%).		2" schedule 40 PVC
40		PID = 0.1		<b>SILTY SAND WITH GRAVEL (SM)</b> brown (7.5YR 4/4), dry, very dense, well-graded sand, poorly-graded gravel, gravels up to 1".		
10.0		PID = 0.0		<b>GRAVELLY CLAY WITH SAND (CL)</b> brown (7.5YR 4/4), moist, firm, medium plasticity, poorly-graded gravels, gravel up to 1". Gravel (20%), sand (10%), fines (70%).		
50		PID = 0.0		<b>SILTY GRAVEL WITH SAND (GM)</b> brown (7.5YR 5/4), moist, very dense, well-graded sand and gravel, gravels up to 3", occasional cobbles, subangular gravels. Gravel (50%), sand (35%), fines (15%).		

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19

PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-21</b>	SHEET 3 OF 4
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : 800 South 1400 East  
 ELEVATION : 4563.5 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7442343.27, E 1543130.2      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 70.0 ft bgs      START : 7/11/2018      END : 7/12/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
55	10.0	PID = 0.0		Increased fines. Becomes moist to dry. Gravel (40%), sand (30%), fines (30%).  10" clay layer at 55' bgs.	Hard to drill for the entire 50-60' bgs run.	Bentonite pellets 2" schedule 40 PVC
60		PID = 0.0		<b>GRAVELLY CLAY WITH SAND (CL)</b> brown (7.5YR 4/4), moist to dry, stiff to very stiff, medium plasticity, poorly-graded gravel (pea gravel). Gravel (25%), sand (10%), fines (65%).	Hard to drill for the entire 60-70' bgs run.	
65	10.0	PID = 0.0		<b>SILTY GRAVEL WITH SAND (GM)</b> brown (10YR 5/3), dry, very dense, well-graded sand and gravel, subangular gravels, gravel up to 2". Gravel (40%), sand (30%), fines (30%).		20/40 silica sand
70		PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/4), moist, very dense, poorly-graded gravels up to 1". Gravel (40%), sand (25%), fines (35%).		0.010" slotted screen, 2" sch. 40 PVC
75	10.0	PID = 0.0		<b>LEAN CLAY (CL)</b> brown (7.5YR 4/4), wet, firm, medium plasticity. Gravel (0%), sand (5%), fines (95%).		3/8" bentonite chips

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER:  
683085

BORING NUMBER:  
MW-21

SHEET 4 OF 4

## Borehole Log

PROJECT : OU-2 Remedial Investigation (Phase 1)

LOCATION : 800 South 1400 East

ELEVATION : 4563.5 ft msl (ground surface)

DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic

COORDINATES : N 7442343.27, E 1543130.2

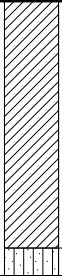


DRILLING METHOD AND EQUIPMENT : Sonic 4x6

WATER LEVEL : 70.0 ft bgs

START : 7/11/2018

END : 7/12/2018

LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
10.0	10.0	PID = 0.0		Becomes moist, no standing water.  Becomes moist to dry.		 Slough
80		PID = 0.0		<b>SILTY SAND (SM)</b> brown (7.5YR 4/4), moist to wet. Boring terminated at 80 ft bgs.		
85						
90						
95						
100						

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-22</b>	SHEET 1 OF 5
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Parkstrip off 900 S. and 1400 E.  
 ELEVATION : 4562.9 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7441969.25, E 1543122.49      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 69.0 ft bgs      START : 7/9/2018      END : 7/10/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
0.0				No recovery from 0-1' bgs.	Hand auger to 1' bgs.	
4.0				<b>SILTY GRAVEL WITH SAND (GM)</b> dark yellowish brown (10YR 4/4), dry, very dense, frequent cobbles. Gravel (45%), sand (40%), fines (15%).	Hard to drill.	
5.0		PID = 0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), dry, very dense, well-graded sand and gravel, occasional cobbles, subrounded to subangular, gravels up to 3". Gravel (50%), sand (30%), fines (20%).	Hard to drill.	
10.0		PID = 0.0		<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> reddish brown / moderate brown (5YR 4/4), moist, firm, medium-low plasticity. Gravel (15%), sand (10%), fines (75%).		
15.0	10.0	PID = 0.0		<b>SILTY GRAVEL WITH SAND (GM)</b> brown (10YR 4/3), moist, dense, well-graded sand and gravel, gravel up to 3", occasional cobbles, subrounded to subangular gravels. Gravel (60%), sand (25%), fines (15%).		
20.0		PID = 0.0				
25.0	5.0	PID = 0.0				

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-22</b>	SHEET 2 OF 5
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Parkstrip off 900 S. and 1400 E.

ELEVATION : 4562.9 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic

COORDINATES : N 7441969.25, E 1543122.49      DRILLING METHOD AND EQUIPMENT : Sonic 4x6

WATER LEVEL : 69.0 ft bgs      START : 7/9/2018      END : 7/10/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
5.0						
30		PID = 0.0				Bentonite pellets
35	10.0	PID = 0.8		<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), moist, dense, well-graded sand and gravel, gravels up to 3", subrounded to subangular gravels. Gravel (40%), sand (30%), fines (30%).		
40		PID = 0.0		<b>LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), moist, firm, medium plasticity. Gravel (5%), sand (5%), fines (90%).		
45	10.0	PID = 0.0		<b>INTERBEDDED SILTY SAND AND LEAN CLAY</b> <u>Sand</u> : Silty sand with gravel (SM), reddish brown (5YR 4/4), moist, dense, well-graded sand, poorly-graded gravel, gravels up to 3/4". Gravel (20%), sand (50%), fines (30%). <u>Clay</u> : Lean clay (CL), reddish brown, (5YR 4/4), moist, firm, medium to low plasticity. Gravel (5%), sand (5%), fines (90%). Sand and clay layers of 3-6".		2" schedule 40 PVC
50		PID = 0.0		<b>SILTY SAND WITH GRAVEL (SM)</b> brown (10YR 4/3), moist to dry, dense, well-graded sand, poorly-graded gravel, gravels up to 3/4". Gravel (20%), sand (50%), fines (30%).		

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-22</b>	SHEET <b>3</b> OF <b>5</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Parkstrip off 900 S. and 1400 E.  
 ELEVATION : 4562.9 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic  
 COORDINATES : N 7441969.25, E 1543122.49      DRILLING METHOD AND EQUIPMENT : Sonic 4x6  
 WATER LEVEL : 69.0 ft bgs      START : 7/9/2018      END : 7/10/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
55	10.0	PID = 0.0		<b>LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), moist, firm, medium plasticity. Gravel (5%), sand (5%), fines (90%).		Bentonite pellets
				<b>SILTY SAND WITH GRAVEL (SM)</b> brown (10YR 4/3), dry, dense, well-graded sand and gravel, gravels up to 3". Gravel (35%), sand (50%), fines (15%).		2" schedule 40 PVC
				<b>GRAVELLY CLAY WITH SAND (CL)</b> reddish brown / moderate brown (5YR 4/4), moist, firm, medium plasticity, subrounded gravels up to 3". Gravel (25%), sand (10%), fines (65%).		
60		PID = 0.0		<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown / moderate brown (5YR 4/4), moist, dense, well-graded sand and gravel.		
				<b>GRAVELLY CLAY WITH SAND (CL)</b> reddish brown / moderate brown (5YR 4/4), moist to wet, firm, medium plasticity. Gravel (20%), sand (10%), fines (70%).  7" clayey gravel layer at 62.5' bgs.		
65	10.0			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown (5YR 5/4), dry, very dense, well-graded sand and gravel, gravels up to 3", subrounded to subangular gravels. Gravel (50%), sand (20%), fines (30%).  Becomes wet at 69' bgs.		20/40 silica sand
70						0.010" slotted screen, 2" sch. 40 PVC
75	10.0	PID = 0.8		<b>CLAYEY SAND WITH GRAVEL (SC)</b> reddish brown (5YR 5/4), wet, dense, well-graded gravel, gravels up to 2", subrounded to subangular gravels. Gravel (30%), sand (60%), fines (10%).		

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-22</b>	SHEET <b>4</b> OF <b>5</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Parkstrip off 900 S. and 1400 E.

ELEVATION : 4562.9 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic

COORDINATES : N 7441969.25, E 1543122.49      DRILLING METHOD AND EQUIPMENT : Sonic 4x6

WATER LEVEL : 69.0 ft bgs      START : 7/9/2018      END : 7/10/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
80	10.0	PID = 1.3		4" clay layer at 75' bgs. Becomes moist. Clay increases. Gravel (30%), sand (50%), fines (20%).  Becomes dry at 77' bgs. Gravels increase. Gravel (40%), sand (50%), fines (10%).  2" gravel layer at 79' bgs.	No water in the core at 75' bgs.	
85	9.0	PID = 0.0		<b>LEAN CLAY (CL)</b> reddish brown (5YR 5/4), moist, firm to stiff, medium plasticity. Gravel (0%), sand (0%), fines (100%).	Lost the core during the 80-90' bgs run. Redrilled the run. The core is disturbed from being redrilled.	
90		PID = 0.0		<b>CLAYEY SAND WITH GRAVEL (SC)</b> reddish brown (5YR 5/4), moist to wet, well-graded sand and gravel, subrounded gravels, gravels up to 3", some cobbles. Gravel (20%), sand (60%), fines (20%).		
95	10.0	PID = 3.2		<b>GRAVELLY LEAN CLAY (CL)</b> reddish brown (5YR 5/4), moist, stiff, poorly-graded gravel, gravels up to 1". Gravel (30%), sand (0%), fines (70%).		
		PID = 0.0		<b>LEAN CLAY (CL)</b> reddish brown (5YR 5/4), moist, firm, low plasticity. Gravel (10%), sand (10%), fines (80%).		
		PID = 0.0		<b>SANDY SILT (ML)</b> reddish brown (5YR 5/4), moist, firm, low to nonplastic. Gravel (10%), sand (30%), fines (60%).		
100		PID = 0.0		<b>GRAVELLY LEAN CLAY WITH SAND (CL)</b> reddish brown (5YR 5/4), moist, very stiff to hard, well-graded subangular gravels. Gravel (40%), sand (10%), fines (50%).  Becomes dry at 98.5' bgs.		

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH\_12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-22</b>	SHEET <b>5</b> OF <b>5</b>
<b>Borehole Log</b>		

PROJECT : OU-2 Remedial Investigation (Phase 1)      LOCATION : Parkstrip off 900 S. and 1400 E.

ELEVATION : 4562.9 ft msl (ground surface)      DRILLING CONTRACTOR AND DRILL RIG : Holt, Terrasonic

COORDINATES : N 7441969.25, E 1543122.49      DRILLING METHOD AND EQUIPMENT : Sonic 4x6

WATER LEVEL : 69.0 ft bgs      START : 7/9/2018      END : 7/10/2018      LOGGER : J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	ENVIRONMENTAL DATA (PID = ppm)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION	WELL DETAILS
105	10.0	PID = 0.0  PID = 2.4  PID = 3.2		<b>GRAVELLY LEAN CLAY WITH SAND (CL)</b> reddish brown (5YR 5/4), dry, medium plasticity, stiff, well-graded gravel, subangular gravel, gravels up to 2". Gravel (30%), sand (15%), fines (55%).  Becomes moist at 102' bgs.		
110		PID = 0.0		<b>CLAYEY SAND WITH GRAVEL (SC)</b> reddish brown (5YR 5/4), wet, poorly-graded subrounded gravels, gravels up to 1". Gravel (15%), sand (40%), fines (45%).  <b>GRAVELLY LEAN CLAY WITH SAND (CL)</b> reddish brown (5YR 5/4), moist, firm, medium plasticity, well-graded subangular gravels up to 1". Gravel (30%), sand (15%), fines (55%).		
				<b>CLAYEY GRAVEL (GC)</b> light brown (7.5YR 6/3), wet, firm, well-graded subangular gravels, gravels up to 3", medium plasticity clay. Gravel (50%), sand (10%), fines (40%).		
115	10.0			<b>LEAN CLAY (CL)</b> reddish brown (5YR 5/4), moist, firm, medium-high plasticity. Gravel (0%), sand (5%), fines (95%).		
120				Boring terminated at 120 ft bgs.		
125						

NEW SOIL BORING LOG; SHALLOW WELL LIBRARY; GLB; SHALLOW WELL PROJECT.GPJ; CH2M GEOTECH; 12.GDT; 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-03R</b>	SHEET 1 OF 17
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : Southwest Side of VA Campus		
ELEVATION : 4698.7 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation		
COORDINATES : N 7444184.97, E 1545418.12	DRILLING METHOD AND EQUIPMENT : Sonic 10x8, 9x8, 8x6		
WATER LEVEL : 187.0 ft bgs	START : 10/8/2018	END : 11/7/2018	LOGGER : R. Hamilton/J.Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
			Hydrovac the boring to 7 feet bgs. No recovery.	
0.0				
5				
2.0			<b>CLAYEY GRAVEL WITH SAND (GC)</b> light reddish brown / light brown (5YR 6/4), moist, dense, well-graded sand and gravel. Subrounded to subangular gravels. Gravel (40%), sand (30%), fines (30%).	PID = 0.0 PPM
10			Large cobble from 9-10 feet bgs.	
4.0			<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown / moderate brown (5YR 4/4), slightly moist, very dense, well-graded sand and gravel. Subrounded to subangular gravels. Frequent cobbles. Gravel (50%), sand (30%), fines (20%).	PID = 0.0 PPM
15				PID = 0.0 PPM
3.0			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), moist, very dense, well-graded sand and gravel. Subangular to subrounded gravels. Frequent cobbles. Gravel (50%), sand (30%), fines (20%).	
20				PID = 0.1 PPM
9.0			<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown / moderate brown (5YR 4/4), moist, very dense, well-graded sand and gravel. Subangular gravels. Some cobbles. Gravel (50%), sand (30%), fines (20%).	
			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), moist, very dense, well-graded sand and gravels. Subangular gravels. Occasional to frequent cobbles. Gravel (50%), sand (30%), fines (20%).	
25				

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-03R</b>	SHEET 3 OF 17
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : Southwest Side of VA Campus		
ELEVATION : 4698.7 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation		
COORDINATES : N 7444184.97, E 1545418.12	DRILLING METHOD AND EQUIPMENT : Sonic 10x8, 9x8, 8x6		
WATER LEVEL : 187.0 ft bgs	START : 10/8/2018	END : 11/7/2018	LOGGER : R. Hamilton/J.Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
55	10.0		Gravel (45%), sand (40%), fines (15%). <b>SANDY LEAN CLAY WITH GRAVEL (CL)</b> reddish brown (5YR 5/4), moist, medium plasticity, medium stiff. Gravel (15%), sand (25%), fines (60%).	PID = 0.1 PPM
			<b>CLAYEY GRAVEL WITH SAND (GC)</b> yellowish red / light brown (5YR 5/6), moist, dense, well-graded gravel. Gravel (50%), sand (30%), fines (20%).	PID = 0.1 PPM
60	10.0		<b>SILTY SAND (SM)</b> reddish brown (5YR 5/4), moist, medium dense, well-graded sand. Gravel (5%), sand (75%), fines (20%).	PID = 0.0 PPM
			<b>CLAYEY GRAVEL WITH SAND (GC)</b> yellowish red / light brown (5YR 5/6), moist, dense, medium plasticity clay, well-graded sand and gravel. Gravel (40%), sand (15%), fines (45%)	
65	10.0		<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown (2.5YR 4/4), moist, dense, well-graded sand and gravel. Subround to subangular gravels. Gravels and cobbles up to 4" in diameter. The percentage of gravels decreases with depth. Gravel (50%), sand (30%), fines (20%) changing to gravel (50%), sand (35%), fines (15%).	PID = 0.0 PPM
			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), moist, very dense, well-graded sand, gravel, and cobbles. Gravels and cobbles up to 9". Gravel (50%), sand (30%), fines (20%).	
70	9.0		<b>SILTY CLAYEY SAND WITH GRAVEL (SC-SM)</b> reddish brown / moderate brown (5YR 4/4), moist, dense, well-graded sand, gravel and cobbles. Cobbles up to 6". Gravel (20%), sand (40%), fines (40%).	PID = 0.0 PPM
			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), moist, very dense, well-graded sand and gravels. Cobbles up to 4". Gravel (50%), sand (30%), fines (20%).	
75			<b>SANDY SILTY CLAY WITH GRAVEL (CL-ML)</b> reddish brown / moderate brown (5YR 4/4), moist, very stiff, low plasticity fines. Gravels up to	

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-03R</b>	SHEET 4 OF 17
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : Southwest Side of VA Campus		
ELEVATION : 4698.7 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation		
COORDINATES : N 7444184.97, E 1545418.12	DRILLING METHOD AND EQUIPMENT : Sonic 10x8, 9x8, 8x6		
WATER LEVEL : 187.0 ft bgs	START : 10/8/2018	END : 11/7/2018	LOGGER : R. Hamilton/J.Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
9.0			2". Gravel (15%), sand (30%), fines (55%).	PID = 0.0 PPM
			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), moist, very dense, well-graded sand and gravel. Occasional cobbles. Subrounded gravels and cobbles. Cobbles up to 6". Gravel (40%), sand (20%), fines (40%).	
			<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown / moderate brown (5YR 4/4), moist, very dense, well-graded sand and gravel. Subangular to subrounded gravel. Occasional cobbles up to 6". Gravel (60%), sand (20%), fines (20%).	
80			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), moist, very dense, well-graded sand, poorly-graded fine gravel. Gravel up to 1". Subrounded gravels. Gravel (50%), sand (20%), fines (30%).	PID = 0.0 PPM
11.0			<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown / moderate brown (5YR 4/4), slightly moist, very dense, well-graded sand and gravel. Frequent cobbles up to 4". Gravel (50%), sand (35%), fines (15%).	
85			<b>SILTY SAND WITH GRAVEL (SM)</b> reddish brown / moderate brown (5YR 4/4), slightly moist, very dense, well-graded sand and gravel. Gravel (25%), sand (50%), fines (25%).	PID = 0.0 PPM
			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), moist, medium dense, well-graded gravel and sand. Gravels up to 3", cobbles up to 4". Subrounded to subangular gravels. Gravel (50%), sand (20%), fines (30%).	
			<b>SILTY GRAVEL WITH SAND (GM)</b> light reddish brown / light brown (5YR 6/4), moist, medium dense, well-graded sand and gravels. Gravels up to 3". Gravel (50%), sand (30%), fines (20%).	
90	7.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> light reddish brown / light brown (5YR 6/4), moist, dense, well-graded sand and gravel. Cobbles up to 9". Gravel (50%), sand (30%), fines (20%). 6" layer of silty gravel with sand (GM) at 91' bgs.	PID = 0.0 PPM
			Cored through a quartz cobble greater than 9" in diameter at 94' bgs. Wet at 94.5' bgs on large cobbles. Moisture sample collected.	
95	3.0		<b>SILTY GRAVEL WITH SAND (GM)</b> light reddish brown / light brown (5YR 6/4), moist, dense, well-graded sand and gravel. Cobbles up to 8". Subrounded to subangular gravels. Gravel (60%), sand (25%), fines (15%).	
			<b>CLAYEY GRAVEL WITH SAND (GC)</b> yellowish red (5YR 4/6), moist, dense, well-graded sand and gravel. Cobbles up to 4". Low plasticity fines. Gravel (60%), sand (20%), fines (20%).	
100	10.0			

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-03R</b>	SHEET 5 OF 17
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : Southwest Side of VA Campus		
ELEVATION : 4698.7 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation		
COORDINATES : N 7444184.97, E 1545418.12	DRILLING METHOD AND EQUIPMENT : Sonic 10x8, 9x8, 8x6		
WATER LEVEL : 187.0 ft bgs	START : 10/8/2018	END : 11/7/2018	LOGGER : R. Hamilton/J.Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
				PID = 0.0 PPM
100	10.0		<b>SILTY GRAVEL WITH SAND (GM)</b> light reddish brown / light brown (5YR 6/4), moist, dense, well-graded sand and gravel. Gravels up to 3". Subangular gravels. Gravel (50%), sand (30%), fines (20%).	PID = 0.2PPM
105				PID = 0.0 PPM
110	10.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> red (2.5YR 4/6), dense, moist, well-graded sand and gravel. Subrounded to subangular gravels. Cobbles up to 5". Low plasticity fines. Gravel (60%), sand (20%), fines (20%).	PID = 0.0 PPM
115				PID = 0.0 PPM
120	10.0		<b>SILTY GRAVEL WITH SAND (GM)</b> light reddish brown / light brown (5YR 6/4), moist, very dense, well-graded sand and gravel, fine to medium grained sand. Subrounded to subangular gravels. Gravel (50%), sand (30%), fines (20%).	PID = 0.0 PPM
			<b>CLAYEY GRAVEL WITH SAND (GC)</b> red (2.5YR 4/6), moist, dense, poorly-graded fine-grained sand and fine-grained gravel. Gravels up to 1". Subrounded to subangular gravels. Gravel (50%), sand (20%), fines (30%).	
			<b>SILTY GRAVEL WITH SAND (GM)</b> light reddish brown / light brown (5YR 6/4), moist, dense, well-graded gravel and sand. Fine to medium-grained sand. Subrounded to subangular gravel. Gravel (50%), sand (30%), fine (20%).	
125			<b>CLAYEY GRAVEL WITH SAND (GC)</b> red (2.5YR 4/6), moist, dense, well-graded sand, poorly-graded gravel. Gravels up to 2".	

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-03R</b>	SHEET 7 OF 17
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : Southwest Side of VA Campus		
ELEVATION : 4698.7 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation		
COORDINATES : N 7444184.97, E 1545418.12	DRILLING METHOD AND EQUIPMENT : Sonic 10x8, 9x8, 8x6		
WATER LEVEL : 187.0 ft bgs	START : 10/8/2018	END : 11/7/2018	LOGGER : R. Hamilton/J.Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
11.0			<b>SILTY GRAVEL WITH SAND (GM)</b> light reddish brown (2.5YR 6/3), moist, dense, well-graded sand, poorly-graded fine gravel. Gravel up to 1". Gravel (50%), sand (30%), fines (20%).	PID = 0.0 PPM
155				PID = 0.0 PPM Sandstone gravel at 155' bgs.
160			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown (2.5YR 5/4), moist, dense, well-graded sand and gravel. Fine to medium grained sand. Gravels up to 3". Gravel (50%), sand (15%), fines (35%).	
160			<b>SILTY GRAVEL WITH SAND (GM)</b> light reddish brown (2.5YR 6/3), moist, dense, well-graded sand, poorly-graded fine gravel. Gravel up to 1". Gravel (50%), sand (30%), fines (20%).	
160			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown (2.5YR 5/4), wet, dense, well-graded gravel and sand. Gravels up to 3". Gravel (50%), sand (15%), fines (35%).	PID = 0.1 PPM
160			<b>SILTY GRAVEL WITH SAND (GM)</b> light reddish brown (2.5YR 6/3), moist, dense, well-graded sand and gravel. Fine to medium grained sand. Cobbles up to 5". Gravel (50%), sand (30%), fines (20%).	
170			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown (2.5YR 5/4), moist to wet, dense, well-graded gravel and sand. Cobbles/boulders larger than 8" core barrel. Gravel (50%), sand (15%), fines (35%).	
170			<b>SILTY GRAVEL WITH SAND (GM)</b> light reddish brown (2.5YR 6/3), moist, dense, well-graded sand and gravel. Fine to medium grained sand. Cobbles up to 4". Gravel (50%), sand (30%), fines (20%).	PID = 0.5 PPM
175				

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-03R</b>	SHEET <b>8</b> OF <b>17</b>
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : Southwest Side of VA Campus		
ELEVATION : 4698.7 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation		
COORDINATES : N 7444184.97, E 1545418.12	DRILLING METHOD AND EQUIPMENT : Sonic 10x8, 9x8, 8x6		
WATER LEVEL : 187.0 ft bgs	START : 10/8/2018	END : 11/7/2018	LOGGER : R. Hamilton/J.Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
10.0			<b>GRAVELLY LEAN CLAY WITH SAND (CL)</b> brown (7.5YR 4/4), very moist (almost wet), firm, medium plasticity. Well-graded sand and gravel. Subrounded gravel and cobbles. Frequent cobbles up to 6". Gravel (35%), sand (10%), fines (55%).	PID = 0.4 PPM
180			<b>SILTY GRAVEL WITH SAND (GM)</b> dark reddish brown / moderate brown (5YR 3/4), moist, very dense, well-graded sand and gravel. Occasional cobbles up to 5". Subrounded to subangular gravel and cobbles. Gravel (65%), sand (20%), fines (15%).	PID = 0.0 PPM
185			<b>CLAYEY GRAVEL WITH SAND (GC)</b> dark reddish brown / moderate brown (5YR 3/4), moist, very dense, well-graded sand and gravel. Gravel up to 3". Subrounded to subangular gravel. Gravel (40%), sand (30%), fines (30%).	PID = 0.0 PPM
190			<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown / moderate brown (5YR 4/4), wet, loose, well-graded sand and gravel. Gravels up to 3". Subrounded to subangular gravels. Gravel (50%), sand (30%), fines (20%).	Drilled from 187-197' bgs but lost the core coming up. Redrilled with an auger bit to get the core. Core is mixed up from redrilling.  Measured static water level at 186.7' bgs. The core from 187-210' bgs has a very high water content. PID = 0.0 PPM
195			<b>SILTY SAND WITH GRAVEL (SM)</b> brown (10YR 4/3), wet, very dense, well-graded sand, poorly-graded gravels up to 1". Gravel (20%), sand (60%), fines (20%).	Collect push-ahead groundwater sample at 192' bgs.  PID = 0.0 PPM
200			<b>SILTY GRAVEL WITH SAND (GM)</b> brown (10YR 4/3), wet, very dense, well-graded sand and gravel. Occasional cobble up to 4". Gravel (50%), sand (25%), fines (25%).	Very hard to drill from 197-202' bgs.

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-03R</b>	SHEET <b>9</b> OF <b>17</b>
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : Southwest Side of VA Campus		
ELEVATION : 4698.7 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation		
COORDINATES : N 7444184.97, E 1545418.12	DRILLING METHOD AND EQUIPMENT : Sonic 10x8, 9x8, 8x6		
WATER LEVEL : 187.0 ft bgs	START : 10/8/2018	END : 11/7/2018	LOGGER : R. Hamilton/J.Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
5.0			<b>CLAYEY GRAVEL WITH SAND (GM)</b> brown (10YR 4/3), wet, very dense, well-graded sand and gravel. Occasional cobbles up to 6". Subrounded gravels and cobbles. Gravel (50%), sand (25%), fines (25%).	PID = 0.0 PPM  Very hard to drill from 202-207' bgs.
205	5.0		<b>SILTY GRAVEL WITH SAND (GM)</b> brown (10YR 4/3), wet, very dense, well-graded sand and gravel. Occasional cobbles up to 4". Gravel (50%), sand (25%), fines (25%).	PID = 0.0 PPM
210			<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (10YR 4/3), wet, very dense, well-graded sand and gravel. Occasional cobbles up to 6". Gravel (50%), sand (20%), fines (30%).	PID = 0.0 PPM  The soil is still saturated with water but is less "soupy" with a lower water content beginning at 210' bgs.
215	10.0		<b>SILTY GRAVEL WITH SAND (GM)</b> brown (10YR 4/3), wet, very dense, well-graded sand and gravel. Occasional cobbles up to 6". Gravel (50%), sand (35%), fines (15%).	PID = 0.1 PPM
220	2.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (10YR 4/3), wet, very dense, well-graded sand and gravel. Occasional cobbles up to 5". Gravel (50%), sand (20%), fines (30%).	Driller stated that he was only able to drill 2 feet from 217-219' bgs because of how hard it was to drill. Collect push-ahead groundwater sample at 217.5' bgs.
220			<b>SILTY GRAVEL WITH SAND (GM)</b> brown (10YR 4/3), wet, very dense, well-graded sand and gravel. Frequent cobbles up to 4". Subrounded gravel and cobbles. Gravel (60%), sand (20%), fines (20%).	PID = 0.0 PPM
225	5.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 5/4), wet, very dense, well-graded sand and gravel. Occasional cobbles up to 6".  Cobbles become less frequent.	Drilled from 219-222' bgs but lost the core. Install the auger bit to go back in to get the core.
225	12.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 5/4), wet, very dense, well-graded sand and gravel. Occasional cobbles up to 6".	Drilled to 224 and initially had no recovery. Had to redrill again to get core

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-03R</b>	SHEET 10 OF 17
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : Southwest Side of VA Campus		
ELEVATION : 4698.7 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation		
COORDINATES : N 7444184.97, E 1545418.12	DRILLING METHOD AND EQUIPMENT : Sonic 10x8, 9x8, 8x6		
WATER LEVEL : 187.0 ft bgs	START : 10/8/2018	END : 11/7/2018	LOGGER : R. Hamilton/J.Olsen




DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
230	12.0		5". Subrounded to subangular gravels. Gravel (50%), sand (20%), fines (30%).	up. The driller stated that he thought he was drilling bedrock because it was so hard to drill.  No recovery, had to redrill.
235	0.0		<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> brown (7.5YR 5/4), wet, firm, low plasticity. Gravel (10%), sand (10%), fines (80%).	
240	0.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 5/4), wet, very dense, well-graded sand, poorly-graded fine gravel up to 1". Gravel (50%), sand (30%), fines (20%).	There was water in the core barrel during the 236-237' bgs run and it caused the core sample bag to blow out into the hopper. No recovery from 236-237' bgs.
245	10.0		<b>SANDY, SILTY CLAY WITH GRAVEL (CL-ML)</b> reddish brown (2.5YR 4/4), wet, firm, low plasticity fines. Occasional siltstone with calcite inclusion cobbles up to 4". Gravel (15%), sand (30%), fines (55%).	
250	3.0		<b>SANDY SILTY CLAY (CL-ML)</b> reddish brown (2.5YR 4/4), wet, firm, low plasticity fines. Gravel (5%), sand (45%), fines (50%).	Collect push-ahead groundwater sample at 247'.

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-03R</b>	SHEET 11 OF 17
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : Southwest Side of VA Campus		
ELEVATION : 4698.7 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation		
COORDINATES : N 7444184.97, E 1545418.12	DRILLING METHOD AND EQUIPMENT : Sonic 10x8, 9x8, 8x6		
WATER LEVEL : 187.0 ft bgs	START : 10/8/2018	END : 11/7/2018	LOGGER : R. Hamilton/J.Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
				PID = 0.0 PPM
255	12.0		<b>LEAN CLAY (CL)</b> reddish brown (2.5YR 4/4), moist-wet, firm to stiff, low plasticity. Gravel (5%), sand 10%), fines (85%). Trace organic fines at 251' bgs.	PID = 0.0 PPM
260				PID = 0.0 PPM
265	5.0		<b>SANDY, SILTY CLAY (CL-ML)</b> reddish brown (2.5YR 4/4), moist to wet, firm, low-medium plasticity. Gravel (10%), sand (30%), fines (60%).	PID = 0.1 PPM
270	10.0		<b>SILTY, CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown (2.5YR 4/4), wet, dense. Poorly-graded fine gravel, poorly-graded fine sand. Gravel (55%), sand (20%), fines (25%). Subangular gravels.	PID = 0.3 PPM. Collect push-ahead groundwater sample at 267' bgs.
275				PID = 0.3 PPM

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-03R</b>	SHEET 12 OF 17
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : Southwest Side of VA Campus		
ELEVATION : 4698.7 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation		
COORDINATES : N 7444184.97, E 1545418.12	DRILLING METHOD AND EQUIPMENT : Sonic 10x8, 9x8, 8x6		
WATER LEVEL : 187.0 ft bgs	START : 10/8/2018	END : 11/7/2018	LOGGER : R. Hamilton/J.Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
10.0			Gravel size increases up to 3" with depth.	PID = 0.3 PPM
280	6.0			PID = 1.1 PPM
				PID = 0.3 PPM
				PID = 0.7 PPM
				PID = 0.5 PPM
285	4.0			PID = 0.8 PPM
			Gravel and moisture content increase with depth. Gravel (60%), sand (20%), fines (20%).	PID = 0.5 PPM. Collect push-ahead groundwater sample at 287' bgs.
290	9.0			PID = 0.1 PPM
295				PID = 0.1 PPM
				PID = 0.3 PPM
	11.0		High moisture content, standing water.	
300			<b>SANDY, SILTY CLAY (CL-ML)</b> reddish brown (2.5YR 5/3), wet, soft to medium stiff, low plasticity. Gravel (0%), sand (31%),	

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-03R</b>	SHEET 13 OF 17
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : Southwest Side of VA Campus		
ELEVATION : 4698.7 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation		
COORDINATES : N 7444184.97, E 1545418.12	DRILLING METHOD AND EQUIPMENT : Sonic 10x8, 9x8, 8x6		
WATER LEVEL : 187.0 ft bgs	START : 10/8/2018	END : 11/7/2018	LOGGER : R. Hamilton/J.Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
305	11.0		fines (69%).	PID = 0.1 PPM
310	5.0		<b>SILTY GRAVEL WITH SAND (GM)</b> brown (7.5YR 5/4), wet, dense, well-graded sand and gravel. Gravel up to 3". Gravel (70%), sand (15%), fines (15%).	PID = 0.2 PPM
315	2.0		The percentage of fines decreases with depth.  7" limestone cobble. Very hard drilling. 312-313' bgs was lost from the barrel, non-cohesive gravels.	Collect push-ahead groundwater sample at 307' bgs.  PID = 0.0 PPM
320	5.0		<b>WELL GRADED GRAVEL WITH SILT AND SAND (GW)</b> brown (7.5YR 5/4), wet, dense, well-graded sand. Gravels up to 3". Gravel (75%), sand (15%), fines (10%).	PID = 0.0 PPM
325	5.0		<b>SANDY LEAN CLAY WITH GRAVEL (CL)</b> brown (7.5YR 5/4), moist-wet, firm. Gravel size is pea gravel. Gravel (15%), sand (20%), fines (65%).	PID = 0.0 PPM
			<b>SILTY CLAYEY GRAVEL WITH SAND (GC)</b> light reddish brown (2.5YR 6/4), wet, dense, gravels up to 2". Gravel (70%), sand (15%), fines (15%).	
			<b>SANDY, SILTY CLAY (CL-ML)</b> brown (7.5YR 5/4), wet, soft-medium stiff, low plasticity fines. Increase gravel content with depth. Gravel (10%), sand (25%), fines (65%).	
			1" thin, poorly-graded fine sand layer at 323' bgs.	
			<b>SILTY CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/3), moist, dense, poorly graded sand. Gravel (60%), sand (20%), fines (20%).	

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-03R</b>	SHEET 14 OF 17
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : Southwest Side of VA Campus		
ELEVATION : 4698.7 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation		
COORDINATES : N 7444184.97, E 1545418.12	DRILLING METHOD AND EQUIPMENT : Sonic 10x8, 9x8, 8x6		
WATER LEVEL : 187.0 ft bgs	START : 10/8/2018	END : 11/7/2018	LOGGER : R. Hamilton/J.Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
5.0				PID = 0.0 PPM
330	4.0			PID = 0.1 PPM Collect push-ahead groundwater sample at 327' bgs.
335			Becomes wet at 334' bgs. Cobbles up to 4". Decreased moisture content in 3" thick coarse material.	PID = 0.2 PPM
340	4.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/4), very moist, to wet, very dense, well-graded sand and gravels. Subrounded gravels up to 3". Medium plasticity fines. Gravel (40%), sand (30%), fines (40%).	Doesn't appear saturated from 338-340' bgs.
345	7.0		Becomes wet. Very high water content through most of the 340-347' run.	PID = 0.1 PPM
350	2.0			PID = 0.0 PPM Collect push-ahead groundwater sample at 347' bgs.
350	8.0		<b>GRAVELLY CLAY WITH SAND (CL)</b> reddish brown / moderate brown (5YR 4/4), moist, firm, medium plasticity. Well-graded	

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19







PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-03R</b>	SHEET <b>16</b> OF <b>17</b>
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : Southwest Side of VA Campus		
ELEVATION : 4698.7 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation		
COORDINATES : N 7444184.97, E 1545418.12	DRILLING METHOD AND EQUIPMENT : Sonic 10x8, 9x8, 8x6		
WATER LEVEL : 187.0 ft bgs	START : 10/8/2018	END : 11/7/2018	LOGGER : R. Hamilton/J.Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
	2.0		<b>CLAYEY SAND WITH GRAVEL (SC)</b> reddish brown / moderate brown (5YR 4/4), wet, very dense, well graded sand and gravel, subrounded to subangular gravels. Gravel (30%), sand (40%), fines (30%).	PID = 0.0 PPM
	5.0		<b>WELL GRADED GRAVEL WITH SILT AND SAND (GW)</b> brown (7.5YR 4/4), wet, very dense, subangular to subrounded gravels. Gravel (70%), sand (20%), fines (10%).	
380			<b>SILTY SAND WITH GRAVEL (SM)</b> brown (7.5YR 4/4), wet, very dense, well graded sand. Gravel (10%), sand (70%), fines (20%).	PID = 0.0 PPM
			<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/4), wet, very dense, well graded sand and gravel. Gravel (40%), sand (30%), fines (40%).	
			<b>SILTY GRAVEL WITH SAND (GM)</b> brown (7.5YR 4/4), wet, very dense, well graded sand and gravel. Subrounded to subangular gravel. Gravel (50%), sand (30%), fines (20%).	
385	5.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/4), wet, very dense, well graded sand and gravel. Subrounded to subangular gravel. Gravel (50%), sand (30%), fines (20%).	PID = 0.0 PPM
				Collect push-ahead groundwater sample at 387' bgs.
390	5.0		Percent fines increase and gravel decrease	PID = 0.0 PPM
395	5.0			PID = 0.0 PPM
400	5.0			

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-08</b>	SHEET 1 OF 17
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : 700 South 1300 East
ELEVATION : 4540.6 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation
COORDINATES : N 7443625.56, E 1542467.27	DRILLING METHOD AND EQUIPMENT : Sonic 10x6, 9x6, 8x6
WATER LEVEL : 61.0 ft bgs	START : 11/14/2018      END : 12/4/2018      LOGGER : R. Hamilton/J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
0.0			Hand auger to 2' bgs.	Unable to hand auger past 2' bgs.
			<b>SILTY SAND WITH GRAVEL (SM)</b> brown (10YR 4/3), dry, dense, well-graded sand and gravel. Gravel (20%), sand (50%), fines (30%).	Fill (road base).
5.0			<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown / moderate brown (5YR 4/4), dry, dense, well-graded sand and gravel, frequent cobbles up to 6", subrounded to subangular gravels and cobbles. Gravel (50%), sand (30%), fines (20%).	
10.0				PID = 0.0 PPM
15.0				PID = 0.1 PPM
20.0			Cobbles become less frequent (occasional cobbles).	
25.0			6" clayey gravel layer, moist around the clay.	PID = 0.0 PPM

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-08</b>	SHEET 2 OF 17
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : 700 South 1300 East
ELEVATION : 4540.6 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation
COORDINATES : N 7443625.56, E 1542467.27	DRILLING METHOD AND EQUIPMENT : Sonic 10x6, 9x6, 8x6
WATER LEVEL : 61.0 ft bgs	START : 11/14/2018      END : 12/4/2018      LOGGER : R. Hamilton/J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
10.0				PID = 0.0 PPM
30	6.0			Drilled from 27-37' bgs, but the bottom 4' fell out of the core barrel.  PID = 0.1 PPM
35	4.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/4), moist, very dense, well-graded sand and gravel, occasional cobbles up to 6", medium plasticity fines. Gravel (40%), sand (30%), fines (30%).	PID = 0.0 PPM
40	10.0		<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown / moderate brown (5YR 4/4), moist, dense, well-graded sand and gravel, occasional cobbles greater than 6", subrounded to subangular gravels and cobbles. Gravel (50%), sand (30%), fines (20%).	PID = 0.6 PPM. PID readings from 39-55' bgs are possibly from heat and moisture. PID = 1.3 PPM
45			<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/3), moist, dense, well-graded sand and gravel, subangular to angular gravels. Gravel (40%), sand (30%), fines (30%).	PID = 1.0 PPM  PID = 0.4 PPM
50	10.0		<b>SILTY GRAVEL WITH SAND (GM)</b> brown (7.5YR 4/3), moist, dense, well-graded sand and gravel, occasional to frequent cobbles, subrounded to subangular gravels and cobbles. Gravel (50%), sand (30%), fines (20%).	PID = 0.2 PPM

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-08</b>	SHEET <b>3</b> OF <b>17</b>
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : 700 South 1300 East
ELEVATION : 4540.6 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation
COORDINATES : N 7443625.56, E 1542467.27	DRILLING METHOD AND EQUIPMENT : Sonic 10x6, 9x6, 8x6
WATER LEVEL : 61.0 ft bgs	START : 11/14/2018      END : 12/4/2018      LOGGER : R. Hamilton/J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
55	10.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/3), moist, dense, well-graded sand and gravel, infrequent cobbles, subrounded to subangular gravels. Gravel (50%), sand (25%), fines (25%).	PID = 0.4 PPM
60	10.0		<b>SANDY LEAN CLAY WITH GRAVEL (CL)</b> yellowish red / light brown (5YR 5/6), wet, firm, medium plasticity. Gravel (10%), sand (25%), fines (65%).	PID = 0.6 PPM  Drilled from 57-67' bgs. Lost 5' of the core. Redrilled with an auger bit to 72' bgs. Recovered 5' of core. Missing 5' of core from between 57-72' bgs.
65	10.0		<b>CLAYEY SAND WITH GRAVEL (SC)</b> brown (7.5YR 4/3), wet, dense, well-graded sand, poorly-graded fine gravel. Gravel (30%), sand (40%), fines (30%). No recovery.	PID = 0.0 PPM  Tagged the top of the water table at 61.2' bgs.
70	5.0		<b>SANDY LEAN CLAY (CL)</b> yellowish red / light brown (5YR 5/6), wet, firm, medium plasticity. Gravel (0%), sand (40%), fines (60%).	PID = 0.0 PPM  Collected groundwater sample at 67'.
75	15.0			PID = 0.0 PPM

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-08</b>	SHEET <b>4</b> OF <b>17</b>
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : 700 South 1300 East
ELEVATION : 4540.6 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation
COORDINATES : N 7443625.56, E 1542467.27	DRILLING METHOD AND EQUIPMENT : Sonic 10x6, 9x6, 8x6
WATER LEVEL : 61.0 ft bgs	START : 11/14/2018      END : 12/4/2018      LOGGER : R. Hamilton/J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
				PID = 0.0 PPM
			<b>SANDY SILT (ML)</b> yellowish red / light brown (5YR 5/6), wet, firm, nonplastic. Gravel (0%), sand (40%), fines (60%).	
80	15.0		<b>LEAN CLAY WITH SAND (CL)</b> yellowish red / light brown (5YR 5/6), wet, firm, medium plasticity. Gravel (0%), sand (20%), fines (80%).  4" sand layer.	PID = 0.0 PPM
			<b>SILTY SAND (SM)</b> yellowish red / light brown (5YR 5/6), wet, dense, poorly-graded fine sand. Gravel (0%), sand (30%), fines (70%).	
85			<b>SANDY LEAN CLAY WITH GRAVEL (CL)</b> yellowish red / light brown (5YR 5/6), wet, firm, medium/high plasticity. Gravel (15%), sand (25%), fines (60%).	PID = 0.0 PPM
90	10.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> yellowish red / light brown (5YR 5/6), wet, dense, well-graded sand and gravel, occasional cobbles. Gravel (50%), sand (25%), fines (25%).	Gradational contact/soil mixed from push-ahead sampler at 90' bgs. PID = 0.0 PPM Pushed push-ahead groundwater sampler to 91'. No water came in, no sample collected.
95				PID = 0.0 PPM
	2.0			Collected push-ahead groundwater sample at 97'.
100				

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-08</b>	SHEET <b>5</b> OF <b>17</b>
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : 700 South 1300 East
ELEVATION : 4540.6 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation
COORDINATES : N 7443625.56, E 1542467.27	DRILLING METHOD AND EQUIPMENT : Sonic 10x6, 9x6, 8x6
WATER LEVEL : 61.0 ft bgs	START : 11/14/2018      END : 12/4/2018      LOGGER : R. Hamilton/J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
105	2.0			Core barrel plugged with a boulder during 97-107' run.
110			<b>LEAN CLAY (CL)</b> olive (5Y 5/4), moist, stiff to very stiff, medium/high plasticity. Gravel (0%), sand (0%), fines (100%).	The clay boundary is unknown due to poor recovery from the 97-107' run.  PID = 0.0 PPM
115	10.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> yellowish brown (10YR 5/6), wet, very dense, well-graded sand and gravel, angular to subrounded gravel. Gravel (40%), sand (30%), fines (30%).	
115			<b>SANDY LEAN CLAY WITH GRAVEL (CL)</b> brown (7.5YR 4/4), wet, firm, medium plasticity. Gravel (10%), sand (30%), fines (60%).	
120			<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/4), wet, very dense, well-graded sand and gravel, occasional cobbles. Gravel (40%), sand (30%), fines (30%).	PID = 0.0 PPM
120			<b>GRAVELLY CLAY WITH SAND (CL)</b> brown (7.5YR 4/4), moist, stiff, medium plasticity. Gravel (20%), sand (20%), fines (60%).	Collected push-ahead groundwater sample at 117'.  PID = 0.0 PPM
125	20.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/4), wet, very dense, well-graded sand and gravel. Gravel (40%), sand (30%), fines (30%).	
125			<b>SANDY LEAN CLAY WITH GRAVEL (CL)</b> brown (7.5YR 4/4), wet, firm, medium plasticity. Gravel (20%), sand (30%), fines (50%).	

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-08</b>	SHEET <b>6</b> OF <b>17</b>
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : 700 South 1300 East
ELEVATION : 4540.6 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation
COORDINATES : N 7443625.56, E 1542467.27	DRILLING METHOD AND EQUIPMENT : Sonic 10x6, 9x6, 8x6
WATER LEVEL : 61.0 ft bgs	START : 11/14/2018      END : 12/4/2018      LOGGER : R. Hamilton/J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION  SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS  DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
130	20.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/4), wet, very dense, well-graded sand and gravel, subrounded gravels up to 3".	PID = 0.0 PPM
135			<b>SANDY LEAN CLAY (CL)</b> brown (7.5YR 4/4), wet, firm, medium/low plasticity fines, fine-grained sand. Gravel (0%), sand (35%), fines (65%).	PID = 0.0 PPM
140			<b>SANDY SILT (ML)</b> brown (7.5YR 4/4), wet, firm, nonplastic fines, fine-grained sand. Gravel (0%), sand (35%), fines (65%).  Clay layers up to 1/2" from 138-143' bgs.	Collected push-ahead groundwater sample at 137'.
145	20.0		4" sand layer.  <b>SILTY GRAVEL WITH SAND (GM)</b> brown (7.5YR 4/4), wet, very dense, well-graded sand and gravel, occasional cobbles. Gravel (40%), sand (40%), fines (20%). No more cobbles.	
150				

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-08</b>	SHEET <b>7</b> OF <b>17</b>
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : 700 South 1300 East
ELEVATION : 4540.6 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation
COORDINATES : N 7443625.56, E 1542467.27	DRILLING METHOD AND EQUIPMENT : Sonic 10x6, 9x6, 8x6
WATER LEVEL : 61.0 ft bgs	START : 11/14/2018      END : 12/4/2018      LOGGER : R. Hamilton/J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION  SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS  DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
155	20.0		<b>SANDY LEAN CLAY (CL)</b> brown (7.5YR 4/4), wet, firm, medium/low plasticity, fine-grained sand. Gravel (0%), sand (40%), fines (60%).	PID = 0.0 PPM  Collected push-ahead groundwater sample at 157'.  PID = 0.0 PPM
165	20.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> brown (7.5YR 4/4), wet, dense, well-graded sand and gravel, rounded to subrounded gravels up to 3". Gravel (40%), sand (30%), fines (30%).	PID = 0.0 PPM  Gradational contact.  PID = 0.0 PPM
175				

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-08</b>	SHEET 8 OF 17
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : 700 South 1300 East		
ELEVATION : 4540.6 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation		
COORDINATES : N 7443625.56, E 1542467.27	DRILLING METHOD AND EQUIPMENT : Sonic 10x6, 9x6, 8x6		
WATER LEVEL : 61.0 ft bgs	START : 11/14/2018	END : 12/4/2018	LOGGER : R. Hamilton/J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
20.0			Color change to 7.5YR 5/4 brown.	PID = 0.0 PPM  Collected push-ahead groundwater sample at 177'. PID = 0.0 PPM
180				PID = 0.0 PPM
185			Coarsening with depth. Gravel (50%), sand (30%), fines (20%).	
190				PID = 0.0 PPM
195				PID = 0.0 PPM
200			Increased gravels. Gravel (60%), sand (25%), fines (15%).	Collected push-ahead groundwater sample at 197'. PID = 0.0 PPM

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-08</b>	SHEET <b>10</b> OF <b>17</b>
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : 700 South 1300 East
ELEVATION : 4540.6 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation
COORDINATES : N 7443625.56, E 1542467.27	DRILLING METHOD AND EQUIPMENT : Sonic 10x6, 9x6, 8x6
WATER LEVEL : 61.0 ft bgs	START : 11/14/2018      END : 12/4/2018      LOGGER : R. Hamilton/J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION  SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS  DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
230	20.0			PID = 0.0 PPM
235				PID = 0.0 PPM
240			<b>CLAYEY GRAVEL WITH SAND (GC)</b> yellowish red (5YR 4/6), wet, dense, well graded sand and gravel, rounded gravels up to 2". Gravel (40%), sand (30%), fines (30%).	Collected push-ahead groundwater sample at 237'.  PID = 0.0 PPM
245	20.0			PID = 0.0 PPM
250				

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19





<b>PROJECT NUMBER:</b> 683085	<b>BORING NUMBER:</b> MW-08	<b>SHEET 11 OF 17</b>
<b>Borehole Log</b>		

<b>PROJECT :</b> VA RI	<b>LOCATION :</b> 700 South 1300 East
<b>ELEVATION :</b> 4540.6 ft msl (ground surface)	<b>DRILLING CONTRACTOR AND DRILL RIG :</b> Cascade, Sonic Drill Corporation
<b>COORDINATES :</b> N 7443625.56, E 1542467.27	<b>DRILLING METHOD AND EQUIPMENT :</b> Sonic 10x6, 9x6, 8x6
<b>WATER LEVEL :</b> 61.0 ft bgs	<b>START :</b> 11/14/2018 <b>END :</b> 12/4/2018 <b>LOGGER :</b> R. Hamilton/J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
			<b>LEAN CLAY (CL)</b> yellowish red (5YR 4/6), moist, stiff, medium plasticity. Gravel (0%), sand (5%), fines (95%).	PID = 0.0 PPM
	20.0		<b>CLAYEY GRAVEL WITH SAND (GC)</b> yellowish red (5YR 4/6), wet, dense, well graded sand and gravel, subrounded and rounded gravels up to 2". Gravel (40%), sand (30%), fines (30%).	
255			<b>LEAN CLAY (CL)</b> yellowish red (5YR 4/6), moist, stiff, medium plasticity. Gravel (0%), sand (10%), fines (90%).	PID = 0.0 PPM
			<b>SILTY GRAVEL WITH SAND (GM)</b> yellowish red (5YR 4/6), wet, medium dense, well graded sand and gravel. Rounded gravels up to 1.5". Gravel (50%), sand (35%), fines (15%).	Collected push-ahead groundwater sample at 257'.
			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), moist to wet, dense, subround to subangular gravels up to 3". Well graded sand and gravel. Gravel (60%), sand (15%), fines (25%).	
260			Fines increase with depth. Gravel (55%), sand (15%), fines (30%).	PID = 0.0 PPM
265	17.0			PID = 0.0 PPM
270			<b>LEAN CLAY WITH SAND AND GRAVEL (CL)</b> reddish brown (5YR 5/4), moist to wet, soft, low plasticity. Gravel (20%), sand (15%), fines (60%).	PID = 0.0 PPM
			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown (5YR 5/4), moist to wet, dense, well graded sand and gravel up to 1". Gravel (55%), sand (15%), fines (30%).	
275	4.0			

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-08</b>	SHEET 13 OF 17
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : 700 South 1300 East		
ELEVATION : 4540.6 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation		
COORDINATES : N 7443625.56, E 1542467.27	DRILLING METHOD AND EQUIPMENT : Sonic 10x6, 9x6, 8x6		
WATER LEVEL : 61.0 ft bgs	START : 11/14/2018	END : 12/4/2018	LOGGER : R. Hamilton/J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
				PID = 0.0 PPM
305			<b>SILTY GRAVEL WITH SAND (GM)</b> reddish brown (5YR 4/3), wet, dense subrounded to subangular gravels up to 3". Gravel (60%), sand (20%), fines (20%). fines increase with depth. Gravel (60%), sand (20%), fines (20%).	
	20.0		1" layer of black organic fines at 305' underlain by 6" of sandy lean clay (CL). Fines increase with depth. Gravel (50%), sand (30%), fines (20%).	
310			<b>LEAN CLAY WITH SAND (CL)</b> yellowish red / light brown (5YR 5/6), moist, firm, medium plasticity, cohesive. Gravel (0%), sand (15%), fines (85%). Speckled with black organic fines from 309.5 to 311'.	PID = 0.0 PPM
315				
320			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), moist, dense, well graded sand and gravel up to 2". Gravel (55%), sand (20%), fines (25%).	Collected push-ahead groundwater sample at 317'.
	20.0			
325			<b>LEAN CLAY WITH GRAVEL (CL)</b> yellowish red (5YR 4/6), moist, medium stiff, cohesive, gravels up to 0.5".	PID = 0.0 PPM

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19



PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-08</b>	SHEET <b>14</b> OF <b>17</b>
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : 700 South 1300 East
ELEVATION : 4540.6 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation
COORDINATES : N 7443625.56, E 1542467.27	DRILLING METHOD AND EQUIPMENT : Sonic 10x6, 9x6, 8x6
WATER LEVEL : 61.0 ft bgs	START : 11/14/2018      END : 12/4/2018      LOGGER : R. Hamilton/J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), moist, dense, well graded sand and gravels up to 3". Gravel (55%), sand (20%), fines (25%).	PID = 0.0 PPM
330	20.0		<b>SANDY LEAN CLAY (CL)</b> brown (7.5YR 4/4), moist, medium stiff, cohesive, medium plasticity. Gravel (5%), sand (35%), fines (60%).  4" thick clayey gravel with sand (GC), 5YR 4/4 reddish brown, moist, dense.	PID = 0.0 PPM
335			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), moist, dense, well graded sand and gravel up to 2". Gravel (60%), sand (20%), fines (20%).	
340			<b>LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), moist to wet, very stiff, medium plasticity, speckled with black organic fines throughout. Gravel (0%), sand (10%), fines (90%).  3" thick silt stringer at 340.5'.	No groundwater sample collected at 337'. The push ahead sampler is dry after exposing screen overnight.  PID = 0.0 PPM
345	20.0			PID = 0.0 PPM
350				

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-08</b>	SHEET <b>16</b> OF <b>17</b>
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : 700 South 1300 East
ELEVATION : 4540.6 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation
COORDINATES : N 7443625.56, E 1542467.27	DRILLING METHOD AND EQUIPMENT : Sonic 10x6, 9x6, 8x6
WATER LEVEL : 61.0 ft bgs	START : 11/14/2018      END : 12/4/2018      LOGGER : R. Hamilton/J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
20.0			2" thick layer of subround to subangular fine gravel at 376.5'.	PID = 0.0 PPM
380			<b>LEAN CLAY (CL)</b> reddish brown (5YR 5/4), dry to moist, very stiff, medium plasticity, speckled with black organic fines throughout. Gravel (0%), sand (10%), fines (90%).	Collected push-ahead groundwater sample at 377'.  PID = 0.0 PPM
385			<b>LEAN CLAY WITH SAND (CL)</b> reddish brown (5YR 5/4), moist, soft, low plasticity. Gravel (0%), sand (20%), fines (80%).	
385			<b>LEAN CLAY (CL)</b> reddish brown (5YR 5/4), dry, very stiff, medium plasticity, speckled with black organic fines throughout. Gravel (0%), sand (10%), fines (90%).	PID = 0.0 PPM
390			<b>SANDY LEAN CLAY (CL)</b> reddish brown / moderate brown (5YR 4/4), wet, soft, low plasticity. Gravel (10%), sand (30%), fines (60%).	PID = 0.0 PPM
395			<b>SANDY LEAN CLAY WITH GRAVEL (CL)</b> reddish brown / moderate brown (5YR 4/4), wet, soft, low plasticity. Gravel (15%), sand (30%), fines (55%).	
395			<b>CLAYEY GRAVEL WITH SAND (GC)</b> reddish brown / moderate brown (5YR 4/4), wet, dense, well graded sand and gravel up to 2". Gravel (70%), sand (15%), fines (15%).	
400				No groundwater sample collected at 397'. The push ahead sampler is dry after exposing screen for 1 hour.

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19





PROJECT NUMBER: <b>683085</b>	BORING NUMBER: <b>MW-08</b>	SHEET 17 OF 17
<b>Borehole Log</b>		

PROJECT : VA RI	LOCATION : 700 South 1300 East		
ELEVATION : 4540.6 ft msl (ground surface)	DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation		
COORDINATES : N 7443625.56, E 1542467.27	DRILLING METHOD AND EQUIPMENT : Sonic 10x6, 9x6, 8x6		
WATER LEVEL : 61.0 ft bgs	START : 11/14/2018	END : 12/4/2018	LOGGER : R. Hamilton/J. Olsen

DEPTH BELOW GROUND SURFACE (ft)	RECOVERY (ft)	GRAPHIC LOG	SOIL DESCRIPTION  SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS  DEPTH OF CASING, DRILLING DETAILS, INSTRUMENTATION
			<p><b>SILTY GRAVEL WITH SAND (GM)</b> brown (7.5YR 5/4), wet, dense, well graded sand and gravel up to 2". Gravel (70%), sand (15%), fines (15%).</p>	PID = 0.0 PPM
405			<p><b>LEAN CLAY (CL)</b> reddish brown (5YR 5/4), dry to moist, medium stiff, low plasticity. Gravel (0%), sand (10%), fines (90%).</p>	PID = 0.0 PPM
410	20.0			PID = 0.0 PPM
415			<p><b>LEAN CLAY WITH SAND (CL)</b> reddish brown (5YR 5/4), moist, soft, low plasticity. Gravel (0%), sand (20%), fines (80%).</p>	PID = 0.0 PPM
420	0.0			Collected push-ahead groundwater sample at 417'.
			Boring terminated at 420 ft bgs.	
425				

NEW SOIL BORING LOG: SHALLOW WELL LIBRARY.GLB: VHA RI DEEP WELL.GPJ: CH2M GEOTECH\_12.GDT: 3/28/19



PROJECT NUMBER:  
683085

BORING NUMBER:  
MW-03R

SHEET 1 OF 1

# Borehole Log

PROJECT : VA RI

LOCATION : SW Side of VA Campus

ELEVATION : pending

DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation

COORDINATES : pending

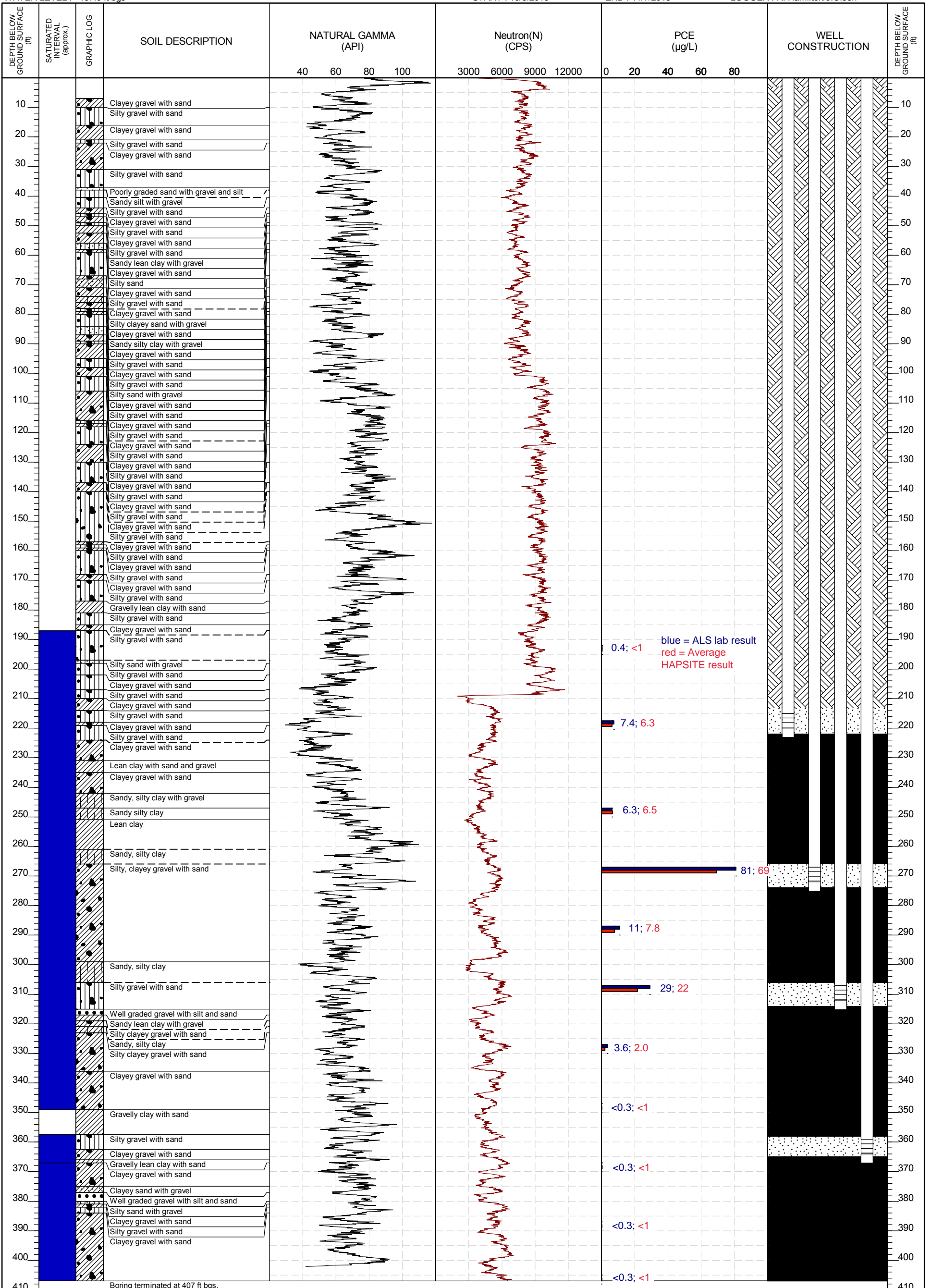
DRILLING METHOD AND EQUIPMENT : Sonic 10x8, 9x8, 8x6

WATER LEVEL : 187.0 ft bgs

START : 10/8/2018

END : 11/7/2018

LOGGER : R. Hamilton/J.Olsen





PROJECT NUMBER:  
683085

BORING NUMBER:  
MW-08

SHEET 1 OF 1

### Borehole Log

PROJECT : VA RI

LOCATION : 700 South 1300 East

ELEVATION : pending

DRILLING CONTRACTOR AND DRILL RIG : Cascade, Sonic Drill Corporation

COORDINATES : pending

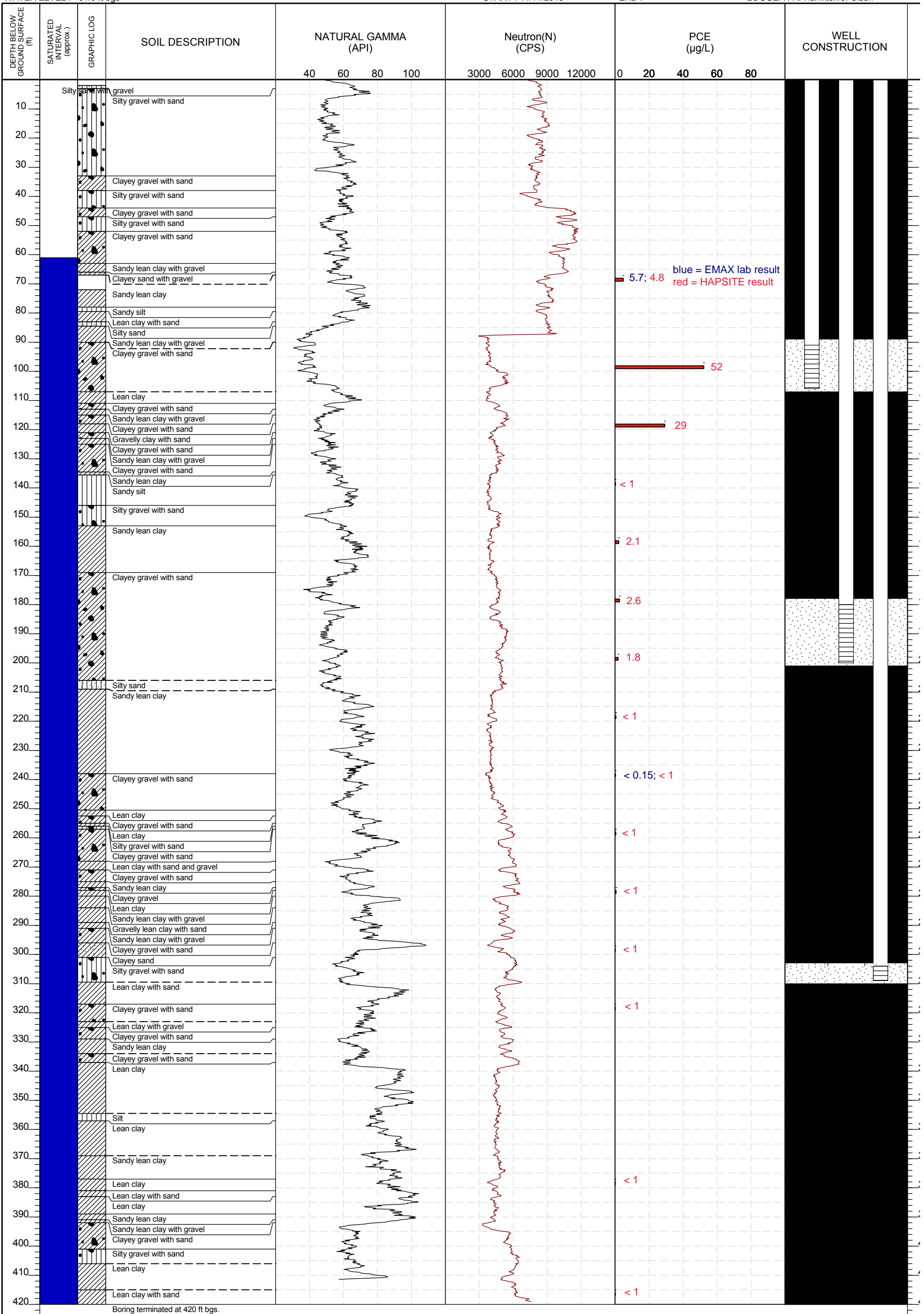
DRILLING METHOD AND EQUIPMENT : Sonic 10x6, 9x6, 8x6

WATER LEVEL : 61.0 ft bgs

START : 11/14/2018

END : TBD

LOGGER : R. Hamilton/J. Olsen





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 Denver, CO 80202  
 (303) 383-2300

# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL BORING/WELL NUMBER MW-23  
 PROJECT NAME 700 S 1600 E PCE Plume DATE DRILLED 4/7/2020 - 4/15/2020  
 LOCATION Salt Lake City, UT CASING TYPE/DIAMETER 1-inch SCH 80 PVC  
 DRILLING METHOD Sonic SCREEN TYPE/SLOT 1-inch SCH 80 0.020-slot  
 SAMPLING METHOD Sonic Grab GRAVEL PACK TYPE #10/20 sand  
 GROUND ELEVATION (FT MSL) 4712.47 GROUT TYPE/QUANTITY Bentonite Grout  
 TOP OF CASING (FT MSL) See Table 5 DEPTH TO WATER (FT BGS) \_\_\_\_\_  
 LOGGED BY Joe Milller, Betsy Bott GROUND WATER ELEVATION (FT MSL) \_\_\_\_\_  
 REMARKS A perched groundwater zone was encountered at approx. 150 ft bgs and groundwater was encountered at approx. 200 ft bgs.

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							No Recovery; Vacuum excavated to 14 feet bgs.		
9.8	0.099	MW23-SB040720-16		15	SM		Silty SAND; 55% fine sand; 40% silt; 5% fine to coarse gravel dense; reddish brown (5YR 5/4); moist.	14.0	
27.1	0.106							17.0	
11.3	0.147				SW		Gravelly SAND; 50% fine to medium sand; 30% fine to coarse gravel; 20% silt; weakly cemented in places; dark reddish brown (2.5YR 3/4); moist.		
8.0	0.080				GW		Well graded GRAVEL; 70% fine to coarse gravel; 30% medium to coarse sand; compact; dark reddish brown (2.5YR 3/4); dry.	21.0	
4.5	0.509	MW23-SB040720-24		20	ML		Sandy SILT; 55% silt; 30% fine to coarse sand; 15% fine gravel; slightly cohesive; reddish brown (5YR 4/3); moist.	24.0	
12.6	0.685								
19.2	0.033				GP		Poorly Graded GRAVEL; 100% Fine to coarse subrounded gravel; loose; brown (7.5YR 5/4); moist.		
8.3	0.170	MW23-SB040720-30		25					
9.6	0.170				ML		Gravelly SILT; 60% silt; 40% fine to coarse angular gravel; slightly cohesive; brown (7.5YR 4/3); moist	31.0	
4.0	0.133				GW		Well graded GRAVEL; 70% coarse rounded gravel; 30% fine sand; loose; pink (7.5YR 7/3); dry to moist.	32.0	
7.1	0.130				SP		Gravelly SAND; 60% fine sand; 40% fine to coarse subrounded to subangular poorly sorted gravel; loose, reddish brown (5YR 5/4); moist.	34.0	
50.4	0.175			30					
6.2	0.198								
39.9	0.198								
20.5	0.234								
				35					

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20

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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-23

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 4/7/2020 - 4/15/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
19.0	0.147	MW23-SB040720-49	B	-	ML		Gravelly SILT; 50% silt; 40% fine to coarse gravel; 10% fine to medium sand; stiff; reddish brown (2.5 YR 4/3); moist.	37.0	
9.6	0.030			-	GM		Silty GRAVEL; 60% fine to coarse rounded to subrounded gravel; 20% fine to medium sand; 20% silt; loose; reddish brown (5YR 4/4); moist.	39.0	
6.8	0.133			40	ML		Gravelly SILT; 60% silt; 40% fine to coarse gravel; stiff; cohesive; reddish brown (2.5 YR 4/3); moist.	40.0	
9.6		-	GM		Silty GRAVEL; 60% fine to coarse rounded to subrounded gravel; 10% fine to medium sand; 30% silt; loose; reddish brown (5YR 4/4); moist.				
9.1	0.195	MW23-SB040720-54	B	-	GM			45.0	
16.9	0.210			45	GP		Poorly Graded GRAVEL; 70% fine to coarse subrounded gravel; 30% fine sand; loose; yellowish brown (10YR 5/4); dry.	48.0	
32.3	0.168			-	ML		Gravelly SILT; 50% silt; 35% fine gravel; 15% sand; brown (7.5YR 5/4); moist.	50.0	
16.8	0.386	MW23-SB040720-63	B	50	ML		SILT; 70% silt; 20% fine sand; 10% fine gravel; slightly cohesive; stiff; brown (7.5YR 4/3); moist.	53.0	
12.6	0.454			-	ML				
19.8	0.273			55	GM		Silt GRAVEL; 50% fine to coarse Gravel; 30% Silt; 20% fine sand; loose; light brown (7.5YR 6/4); moist.	60.0	
8.4	0.106	MW23-SB040720-63	B	-	GM			60.0	
13.4	0.133			-	GP		Poorly graded GRAVEL; 50% fine to coarse subrounded to subangular gravel; 40% fine to coarse sand; 10% silt; loose; brown (7.5YR 4/4); moist.	66.0	
5.3	0.034			60	GP				
14.5	0.106	MW23-SB040720-63	B	-	GP			66.0	
20.6	0.170			65	GP				
2.2	0.147			-	ML		Gravelly SILT; 60% silt; 35% fine to coarse gravel; 5% fine sand; slightly cohesive; reddish brown (2.5YR 4/4); moist.	68.0	
2.2	0.112	MW23-SB040720-63	B	-	ML		Gravelly SILT; 60% silt; 35% fine to coarse gravel; 5% fine sand; slightly cohesive; brown (10YR 4/4); moist	70.0	
15.6	0.158			70	ML				
7.8	0.089			-	GW		Sandy GRAVEL; 50% fine to coarse subrounded to subangular gravel; 40% fine sand; 10% silt; loose; reddish brown (5YR 4/4); moist.	74.5	
2.5	0.152	MW23-SB040720-63	B	-	GW				
3.1	0.092			75	GW				

Hydrated bentonite pellets (31 to 127 ft bgs).

Continued Next Page

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-23

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 4/7/2020 - 4/15/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
26.8	6.0	MW23-SB040720-75			GM		Silty GRAVEL; 70% fine to coarse gravel; 30% silt; cohesive in places; reddish brown (2.5 YR 5/4); moist.	76.0	<p>← Hydrated bentonite pellets (31 to 127 ft bgs).</p>
10.6							Sandy GRAVEL; 50% fine to coarse subangular to subrounded well graded gravel; 40% fine to coarse sand; 10% silt; dark reddish brown (2.5YR 3/4); moist.		
8.5	0.149			80	GW				
12.8	0.139								
22.4	0.128	MW23-SB040720-85					Poorly graded GRAVEL; 85% fine to coarse gravel; 15% silt; medium dense; light gray (5YR 7/1); moist.	85.5	
12.3	0.018				GP			87.0	
10.0					GM		Silty GRAVEL; 60% fine gravel; 35% silt; %5 fine to coarse sand; socketed matrix; dense; reddish brown (5YR 4/4); moist.		
12.2	0.871			90				90.0	
44.8	0.189	MW23-SB040720-93			GP		Poorly graded GRAVEL; 60% fine to coarse gravel; 30% fine sand; 10% silt; reddish brown (5YR 4/3); moist.		
19.3	0.220							95.0	
19.3				95			Silty GRAVEL; 60% fine to coarse gravel; 35% silt; %5 fine sand; weakly cemented; reddish brown (5YR 4/4); moist.		
237	0.144	MW23-SB040720-97			GM				
98.2	1.78							99.0	
43.1	0.208			100			SILT; 70% silt; 30% fine to coarse subangular to subrounded gravel; weakly cemented; hard; brown (7.5YR 5/2); dry to moist.		
33.2					ML				
19.3									
8.7	0.243			105				106.0	
16.8									
23.9	0.186	MW23-SB040720-107			GP		Sandy GRAVEL; 50% fine to coarse subangular gravel; 40% fine sand; 10% silt; loose; reddish brown (5YR 4/3); moist.		
23.4	0.172							110.0	
15.4					GP				
51.2	0.183	MW23-SB040820-110			GM		Silty GRAVEL; 60% fine to coarse poorly sorted gravel; 30% silt; 10% fine sand; medium dense; reddish brown (5YR 4/4); moist.		
14.9								112.0	
45.9	0.103				GP		Poorly graded GRAVEL; 70% fine to coarse gravel; 15% fine sand; 15% silt; weakly cemented in places; red (2.5YR 4/6); moist.		
16.8									
18.5	0.007			115				115.0	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-23

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 4/7/2020 - 4/15/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
11.2		MW23-SB040820-124	B		GM		Silty GRAVEL; 60% fine to coarse angular to subangular gravel; 30% silt; 10% fine sand; loose; reddish brown (2.5YR 4/4); moist.	117.0		
20.3	0.089				GP		Poorly graded GRAVEL; 60% fine to coarse angular to subangular gravel; 25% fine sand; 15% silt; loose; reddish brown (2.5YR 4/4); moist.	120.0		
5.1										
7.0		MW23-SB040820-133	B	120			Silty GRAVEL; 60% fine to coarse poorly graded gravel; 25% silt; 15% fine sand; weakly cemented in places; dense; brown (7.5YR 5/3); moist.	128.0		
15.9	0.136									
29.0	0.168									
32.6	0.045	MW23-SB040820-143	B	125	GM					
1.4	0.149									
2.5	0.175									
6.4	0.141	MW23-SB040820-143	B				Poorly graded GRAVEL; 60% fine to coarse gravel; 10% silt; 30% fine sand; loose; brown (7.5YR 5/3); moist.	128.0		#10/20 sand filter pack (127 to 143 ft bgs).
10.2	0.141									
19.5	0.141									
19.8	0.099	MW23-SB040820-143	B		GP					
18.0	0.000									
20.7	0.359									
1.4	0.165	MW23-SB040820-143	B		GP		Poorly graded GRAVEL; 60% fine to coarse gravel; 5% silt; 35% fine sand; loose; reddish brown (5YR 4/4); moist.	136.5	1-inch 0.020 slot screen for vapor monitoring (130 to 140 ft bgs).	
3.9	0.070									
8.5										
16.0	0.166	MW23-SB040820-143	B	140	GM		Silty GRAVEL; 70% fine to coarse poorly graded gravel; 25% silt; 5% fine sand; medium dense; dark reddish brown (5YR 3/4); dry to moist.	142.0		
14.8	0.230									
18.1										
7.0	0.163	MW23-SB040820-143	B	145	GP		Poorly Graded GRAVEL; 50% fine to coarse subrounded to subangular gravel; 40% fine to coarse sand; 10% silt, loose; reddish brown (5YR 5/4); moist.	145.0		
14.9	0.026									
2.9	0.348									
0.8	0.087	MW23-SB040820-143	B		MH		Clayey SILT; 80% medium to high plasticity clayey silt; 20% fine gravel; some lime cement; hard; reddish brown (5YR 3/4); wet.	150.0		
5.4										
10.0	0.013									
4.1		MW23-SB040820-143	B		GM		Silty GRAVEL; 60% fine gravel; 40% silt; medium dense; reddish brown (5YR 3/4); wet.	151.0		
4.1										
							Sandy GRAVEL; 45% fine to coarse subangular to subrounded well graded gravel; 40% fine sand; 15% silt; reddish brown (5YR 5/4); moist.	155.0		

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-23

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 4/7/2020 - 4/15/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
26.9	0.215	MW23-SB040820-155	B	-	GM		Silty GRAVEL; 70% fine to coarse subrounded to angular gravel; 30% silt; dense; dark reddish brown (2.5YR 3/3); moist.		
16.7	0.149			-					
23.4	0.030			-					
9.4	0.030			-					
15.5	0.279	MW23-SB040920-169	B	160	GP		Poorly graded GRAVEL; 60% fine to coarse gravel; 30% fine sand; 10% silt; loose; light reddish brown (5YR 6/4); dry to moist.	166.0	
12.0	0.000			-					
8.5	0.000			-					
4.6	0.102			-					
10.7	0.082	MW23-SB040920-175	B	165	ML		Gravelly SILT; 60% Silt; 40% fine to coarse gravel; cohesive; stiff; dark reddish brown (2.5YR 3/3); moist.	168.0	
10.8	0.053			-					
22.6	0.053			-					
60.2	0.244			-					
1.8	0.244	MW23-SB040920-175	B	170	MH		Clayey SILT; 75% medium to high plasticity clayey silt; 25% fine gravel; stiff; cohesive; dark reddish brown (2.5YR 3/4); moist.	174.5	
3.2	0.446			-					
9.0	0.446			-					
9.2	0.446			-					
95.1	0.198	MW23-SB040920-175	B	175	ML		Gravelly SILT; 60% Silt; 40% fine gravel; slightly cohesive; stiff; strong brown (7.5YR 4/6); moist.	176.0	
50.4	0.198			-					
1.8	0.099			-					
4.8	0.099			-					
8.3	0.050	MW23-SB040920-184	B	180	ML		Gravelly SILT; 65% Silt; 35% fine rounded gravel; cohesive; stiff; dark reddish brown (2.5YR 2.5/4); moist.	180.0	
5.3	0.112			-					
2.3	0.112			-					
19.3	0.112			-					
2.7	0.034	MW23-SB040920-184	B	185	ML		SILT; 85% Silt; 15% fine rounded gravel; cohesive; stiff; weakly cemented red (2.5YR 4/6); moist.	185.0	
6.0	0.034			-					
3.9	0.000			-					
7.8	0.000			-					
1.9	0.152	MW23-SB040920-184	B	190	GP		Sandy GRAVEL; 60% fine poorly graded gravel; 10% silt; 30% fine sand; loose reddish brown (5YR 4/4); wet	188.0	
1.9	0.152			-					
0.5	0.110			-					
1.0	0.110			-					
				195					

Hydrated bentonite pellet seal (143 to 207 ft bgs).

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20

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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume

BORING/WELL NUMBER MW-23  
 DATE DRILLED 4/7/2020 - 4/15/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
1.1	0.120	MW23-SB040920-199	B	196.5	GM		Silty GRAVEL; 60% fine to coarse subrounded to rounded gravel; 25% silt; 15% fine sand; dark reddish brown (2.5YR 3/3); wet.	196.5	
6.0	0.089			200.0				200.0	
13.4	0.110			205				205.0	
3.4	0.000			210				210.0	
5.5	0.000	MW23-SB040920-208	B	205	GM		- 205 to 210 feet bgs sample slid out of core barrel and was retrieved during the 210 to 220 feet bgs sonic run.	209.0	
1.7	0.000			210				210.0	
12.9	0.759			215				213.0	
6.3	0.259	MW23-SB040920-218	B	210	GM		Silty GRAVEL; 60% fine to coarse subrounded to rounded gravel; 30% silt; 10% fine sand; medium dense; socketed matrix; reddish brown (5YR 4/4); moist to wet.	217.0	
27.3	0.259			215				213.0	
34.2	0.886			220				220.0	
17.6	0.097			225				221.5	
21.3	0.097	MW23-GW040920-220	B	215	GP		Sandy GRAVEL; 50% fine subangular to angular gravel; 40% fine sand; 10% silt; weakly cemented in places; loose to medium dense; reddish brown (2.5YR 4/3); dry to moist.	221.5	
29.3	0.128			220				221.5	
26.6	0.128			225				225.5	
37.7	0.128	MW23-SB041020-226	B	220	ML		Silty GRAVEL; 60% fine to coarse subrounded to rounded gravel; 30% silt; 10% fine sand; medium dense; socketed matrix; reddish brown (5YR 4/4); moist.	225.5	
0.3	0.158			225				225.5	
0.5	0.160			230				232.5	
3.4	0.073	MW23-SB041020-230	B	225	ML		Sandy SILT; 50% low plasticity silt; 40% fine sand; 10% fine gravel; stiff; cohesive; dark reddish brown (5YR 3/4); wet.	232.5	
0.8	0.073			230				232.5	
3.7	0.049			235				235.0	
7.8	0.049			235				235.0	
6.0	0.095	MW23-SB041020-230	B	230	ML		Gravelly SILT; 60% low plasticity silt; 30% fine to coarse gravel; 10% sand; cohesive; stiff; dark reddish brown (5YR 3/4); moist.	232.5	
3.9	0.095			235				235.0	
5.5	0.095			235				235.0	
1.4	0.192	MW23-SB041020-230	B	235	ML		Sandy SILT; 60% low plasticity silt; 35% fine sand; 5% gravel; cohesive; soft to firm; yellowish red (5YR 4/6); wet.	235.0	
0.2	0.192			235				235.0	
2.9	0.245			235	ML			235.0	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-23

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 4/7/2020 - 4/15/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.3								237.0	Hydrated bentonite pellet seal (224 to 247 ft bgs).
1.4	0.777				SM		Silty SAND; 55% fine to coarse sand; 20% silt; 15% fine gravel; cohesive; yellowish red (5YR 4/6); wet.		
2.3	0.000							240.0	
2.4		MW23-GW041020-240		240			Clayey SILT; 90% medium to high plasticity clayey silt; 10% fine sand; stiff; cohesive; yellowish red (5YR 4/6); wet.		
0.9	0.417								
2.6	0.419	MW23-SB041020-244		245	MH				
1.7									
0.8	0.425				GM		Silty GRAVEL; 65% fine to coarse gravel; 35% silt; socketed matrix; brown (7.5YR 4/3); moist to wet.	247.0	
							Poorly Graded SAND; 80% fine sand; 10% fine to coarse gravel; 10% silt; loose; brown (10YR 4/3); dry.	248.0	
0.7	0.095				ML		Gravelly SILT; 60% low plasticity silt; 40% fine gravel; cohesive; yellowish red (5YR 4/6); wet.	250.0	#10/20 sand filter pack (247 to 264 ft bgs).
1.2								251.0	
21.9	0.178			250	SM		Silty SAND; 55% fine to coarse sand; 20% silt; 15% fine gravel; cohesive; yellowish red (5YR 4/6); moist.		
30.5	0.144						Poorly graded SAND; 80% fine to coarse sand; 10% fine gravel; 10% silt; loose; yellowish brown (10YR 6/4); dry to moist.	254.5	
12.5	0.111				SP				
96.3									
17.6	1.02			255					1-inch SCH 80 0.020-slot screen ZIST nested well (250 to 260 ft bgs).
24.1									
120	0.108	MW23-SB041020-257							
470									
73.6	0.136							258.5	
350							Poorly graded GRAVEL; 60% fine to coarse gravel; 30% fine sand; 10% silt; weakly to moderately cemented; very dense; weak red (10R 4/2); dry to moist.	261.0	
9.9	0.595	MW23-GW041020-260		260	GP				
52.8		MW23-SB041220-261					Gravelly SILT; 60% low plasticity silt; 30% fine to coarse gravel; 10% fine sand; cohesive; stiff; brown (7.5YR 5/3) with red mottling; wet.		
3.4	1.20								
27.2	0.160								
11.0				265	ML				
16.4	0.334								
37.3	0.390								
17.2									
1.4	0.000			270	SM		Silty SAND; 60% fine to coarse sand; 35% silt; 5% fine gravel; light yellowish brown (5YR 6/4); wet.	270.0	
5.5	0.345						Clayey SILT; 95% medium to high plasticity clayey silt; 5% fine sand; very stiff; cohesive; yellowish red (5YR 6/4); moist.	272.0	
2.8	0.167				MH				
				275				275.0	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-23

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 4/7/2020 - 4/15/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM		
2.3		MW23-SB041220-280	B	279.0	ML		Sandy SILT; 60% low to medium plasticity silt; 30% fine sand; 10% fine gravel; stiff; cohesive; yellowish red (5YR 4/6); moist.	279.0			
2.6	0.148										
2.7	0.030										
3.2							280	SM		Silty SAND; 50% fine to medium sand; 40% silt; 10% fine gravel; weakly cemented; yellowish red (5YR 4/6); moist.	280.0
5.3	0.460										
4.8											
0.2	0.445							MH		Clayey SILT; 85% high plasticity clayey silt; 10% fine sand; 5% fine gravel; cohesive; stiff; red (2.5YR 4/ 6); moist to wet.	
1.0	0.395						285				286.0
1.5											
3.3	0.224									SILT; 80% low to medium plasticity silt; 20% fine to medium sand; cohesive; red (2.5YR 4/6); moist to wet.	
2.5											
0.5	0.400			290							
					ML						
				295							
1.3											
4.2	0.255			300		SILT; 80% low to medium plasticity silt; 10% fine to medium sand; 10% fine rounded gravel; cohesive; very stiff; red (2.5YR 4/6); moist to wet.	299.0				
2.4	0.308				ML						
8.4	0.327			305							
0.7											
19.5	0.478				ML	Gravelly SILT; 70% low plasticity silt; 30% fine gravel; very stiff; brown (7.5YR 4/4); dry to moist.	306.0				
19.7		MW23-SB041220-307			GM	Silty GRAVEL; 70% fine gravel; 30% silt; cemented; dense; pinkish white (7.5YR 8/2); dry.	307.0				
11.3	0.404										
349	0.320	MW23-GW041220-310		310	ML	Sandy SILT; 70% low plasticity silt; 30% fine to medium sand; cohesive; very stiff; light brown (7.5YR 6/4) dry.	308.0				
624	0.683										
15000	0.312										
5006					GM	Silty GRAVEL; 70% fine to coarse gravel; 30% silt; dense; cemented; light brown (7.5YR 6/4); dry to moist.	313.0				
15000	0.278	MW23-		315		Silty GRAVEL; 60% fine gravel; 30% silt; 10% fine to coarse	314.0				

← Hydrated bentonite pellet seal (264 to 344 ft bgs).

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-23

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 4/7/2020 - 4/15/2020

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
110		SB041320-314					sand; dense; cohesive; brown (7.5YR 4/4); moist to wet.		
865	0.319								
713									
187	0.460				GM				
543									
39.7	0.161			320					
2.4	0.385							322.5	
12.8		MW23-SB041320-324					Silty GRAVEL; 60% fine to coarse gravel; 25% silt; 15% fine to coarse sand; medium dense; cohesive; brown (7.5YR 4/4); moist to wet.		
198	0.275			325					
19.8					GM				
49.0	0.123								
38.8							-becomes wet		
6.7	0.116								
2.0								330.0	
65.3	0.673			330			Gravelly SILT; 50% low plasticity silt; 40% fine to coarse gravel; 10% fine sand; cohesive; stiff; brown (7.5YR 5/3); moist to wet.		
83.5					ML				
39.8	0.733								
85.1		MW23-SB041420-334		335				335.0	
17.7					GM		Silty GRAVEL; 60% fine to coarse gravel; 40% silt; loose; strong brown (7.5YR 5/6); wet.		
2.2	0.872							337.0	
44.7					ML		Gravelly SILT; 60% low plasticity silt; 40% fine gravel; cohesive; strong brown (7.5YR 5/6); wet.		
60.1	0.502							340.0	
29.0	0.435	MW23-GW041420-340		340			Silty GRAVEL; 60% fine to coarse gravel; 40% silt; medium dense; brown (7.5YR 5/3); wet.	341.0	
		MW23-SB041420-340			GM				
5.5	0.143				GP		Sandy GRAVEL; 50% fine to coarse subrounded gravel; 40% fine sand; 10% silt; loose; brown (7.5YR 5/4); wet.		
9.2								344.0	
706	0.770	MW23-SB041520-346		345			Clayey SILT; 80% medium to high plasticity clayey silt; 20% gravel; cohesive; stiff; brown (7.5YR 5/3); dry to moist.	346.0	
					GP		Poorly Graded GRAVEL; 80% fine gravel; 20% silt; loose; brown (7.5YR 5/3); dry.	347.0	
556									
132	0.550						Gravelly SILT; 60% medium to high plasticity clayey silt; 40% fine to coarse rounded gravel; very stiff; brown (7.5YR 5/3); dry to moist.		
433									
62	0.430			350	MH				
532	0.270							354.0	
525									
2.8	0.582						Gravelly SILT; 60% low plasticity silt; 40% fine gravel; soft;		
				355					

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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-23

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 4/7/2020 - 4/15/2020

*Continued from Previous Page*

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
2.8				1.0	ML		brown (7.5YR 5/4); wet.	360.0	
				360			End of boring at 360 ft bgs.		

WHITNEY'S BORING LOG\_SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ\_LAEVNN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL BORING/WELL NUMBER MW-24  
 PROJECT NAME 700 S 1600 E PCE Plume DATE DRILLED 5/11/2020 - 5/15/2020  
 LOCATION Salt Lake City, UT CASING TYPE/DIAMETER 4-inch SCH 40 PVC  
 DRILLING METHOD Sonic SCREEN TYPE/SLOT 4-inch SCH 40 0.010-slot  
 SAMPLING METHOD Sonic Grab GRAVEL PACK TYPE #10/20 sand  
 GROUND ELEVATION (FT MSL) 4709.77 GROUT TYPE/QUANTITY Bentonite Grout  
 TOP OF CASING (FT MSL) See Table 5 DEPTH TO WATER (FT BGS) \_\_\_\_\_  
 LOGGED BY Joe Miller GROUND WATER ELEVATION (FT MSL) \_\_\_\_\_  
 REMARKS A perched groundwater zone was encountered at approx. 160 ft bgs and groundwater was encountered at approx. 200 ft bgs.

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							Hydrovac from 0 to 11 ft bgs.		
8.2	0.185	MW-24-SB051120-14		5					
0.8	0.179								
2.7									
2.6	2.01					GM	Silty GRAVEL: fine to coarse; dense; reddish brown (5 YR 4/4); moist.		
4.6									
3.1									
5.7	0.121				15	SP	SAND and GRAVEL with Silt: 45% sand, poorly graded; 45% fine to coarse gravel; 10% silt; light brown (7.5 YR 6/3); loose; dry.	11.0	
0.8	0.118					GP		15.0	
4.8								17.0	
2.5						ML	Gravelly SILT: brown (7.5 YR 4/2); stiff, cohesive; moist.	18.0	
4.7	0.484								
1.6					GM	Silty GRAVEL with Sand: 50% fine to coarse gravel, 6 to 8 inch cobbles; 35% silt; 15% sand; reddish brown (5 YR 4/4).	18.0		
0.213	2.5	MW-24-SB051120-22		20			Sandy SILT: fine sand; lamination; reddish brown (5 YR 5/4); stiff; cohesive in places; trace iron oxide staining; moist.	20.0	
0.4	0.257								
4.5									
0.3	0.466					ML	Large (4 to 8 inch) cobble at 22.2 ft bgs.		
9.8									
3.1	0.27								
5									
0.1	0.616				25		Cohesive layer at 25.7 ft bgs.	26.0	
2.7	0.199								
2.1									
4.3	0.152				GW	GRAVEL with Sand and Silt: 55% fine to coarse gravel, angular to subrounded; 35% sand; 10% silt; brown (7.5 YR 4/3); loose, trace iron oxide staining; dry to moist.			
2	0.145			30					
6.7	0.218								
5.3	0.133								
8.2	0.146				GW	GRAVEL with Sand and Silt: same as above with an 8 inch cohesive silt interval at 32 ft bgs; brown (7.5 YR 4/3); dry to moist.	32.0		
13.8		MW-		35			GRAVEL with Sand and Silt: same as above with 6 inch	34.0	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-24

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/11/2020 - 5/15/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
13.3	0.074	24-SB051120-34	B	36.0	GW		cohesive silt interval at 34.4 to 35 ft bgs; brown (7.5 YR 4/3); dry to moist.	36.0	
9.9	0.122			37.0	ML		Gravelly SILT: 60% silt; 40% fine to coarse gravel; cohesive; moist.	37.0	
7.5	0.168			40.0	SW		SAND and GRAVEL: fine to coarse gravel, angular to subrounde; loose; moist.	40.0	
6.4	0.031			42.0	SM		Silty SAND: 70% fine sand; 30% silt; reddish brown (5 YR 5/4); loose; moist.	42.0	
3.8	0.228	MW-24-SB051220-43	B	43.0	GC	Clayey GRAVEL: 60% fine to coarse gravel; 40% clay; reddish brown (5 YR 5/4); medium dense; moist.	43.0		
3.9	0.053			47.0	SW	GRAVEL and SAND: 50% fine to coarse gravel, 4 to 6 inch cobbles; 50% sand; reddish brown (7.5 YR 4/4); loose; moist.	47.0		
6.6	0.053			47.0	CL	CLAY with Gravel: 80% clay, low plasticity; 20% fine to coarse gravel; strong brown (7.5 YR 4/6); stiff; laminated in places; cohesive; dry to moist.	47.0		
5.9	0.037	MW-24-SB051220-56	B	50.0	CL	Sample is moist.	50.0		
5.1	0.345			57.0		GW	Sandy GRAVEL with Silt: 60% fine to coarse gravel; 30% sand; 10% silt; reddish brown (5 YR 5/3); medium dense; moist.	57.0	
5.1	0.104			62.0		CL	Gravelly SILT: 60% silt, low plasticity; 40% fine to coarse gravel; reddish brown (5 YR 4/4); cohesive; moist to wet.	62.0	
2.3	0.104			64.0		GW	GRAVEL with Sand and Silt: 60% fine to coarse gravel, subangular to subrounded; 30% sand; 10% silt; brown (7.5 YR 4/4); moist.	64.0	
3.5	0.279			67.5		ML	Gravelly SILT: fine gravel; brown (7.5 YR 4/4); cohesive; moist.	67.5	
3.2	0.179	MW-24-SB051220-61	B	71.0	GW	GRAVEL: fine to coarse gravel; large cobbles, 6 to 8 inches; yellowish brown (10 YR 5/4); loose; moist to dry.	71.0		
6.2	0.091			73.0		GW	GRAVEL and SAND: fine to coarse gravel; brown (7.5 YR 4/4); loose; moist.	73.0	
6.7	0.141			75.0		GW	GRAVEL and SAND: fine to coarse gravel; brown (7.5 YR 4/4); loose; moist.	75.0	

Hydrated bentonite pellets (35 to 58 ft bgs).

#10/20 sand filter pack (58 to 63 ft bgs) with 6-inch stainless stell mesh vapor probe at 60 ft bgs.

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-24

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/11/2020 - 5/15/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM			
2.4	0.213	MW-24-SB051220-84	B	-	GW SW		Color is reddish brown (5 YR 4/4).	80.0				
5.5	0.148			-			-			-	-	-
0.1	0.148			-			-			-	-	-
0.3	0.148			-			-			-	-	-
3.1	0.204			-			-			-	-	-
2	0.265			-			-			-	-	GRAVEL with Sand and Silt: 50% fine to coarse grave; 40% sand; 10% silt; reddish brown (5 YR 5/4); medium dense; moist.
7.5	0.146			-			-			-	-	Cohesive layer near 82 ft bgs.
5.6	0.175			-			-			-	-	-
24	0.24			-			-			-	-	-
4.3	0.05			-			-			-	-	GRAVEL with Sand and Silt: 50% fine to coarse gravel; 40% sand; 10% silt; loose.
3.1	0.05	MW-24-SB051220-104	B	85	GM		Silty GRAVEL: compact; dry to moist.	87.0				
4.6	0.05			-			-	-		-	GRAVEL with Sand and Silt: fine to coarse gravel; loose; dry.	88.0
7.2	0.05			-			-	-		-	-	-
20.7	0.247			-			-	-		-	-	-
3.5	0.247			-			-	-		-	-	-
3.1	0.339			-			-	-		-	Gravelly CLAY: 75% clay, medium plasticity; 25% fine to coarse gravel; yellowish red (5 YR 4/6); cohesive; stiff to very stiff; moist to wet.	91.5
2.6	0.339			-			-	-		-	-	-
2.1	0.339			-			-	-		-	-	-
41	0.31			-			-	-		-	-	-
4.9	0.139			-			-	-		-	Silty GRAVEL: 65% fine to coarse gravel; 35% silt, non-plastic; yellowish red (5 YR 4/6); medium dense; moist.	97.5
7	0.139	-	-	-	-	-	-					
2.3	0.175	-	-	-	-	Same as above except increase in sand, medium to coarse.	-					
6.3	0.12	-	-	-	-	-	-					
35	0.12	-	-	-	-	SAND and GRAVEL: 50% well graded, fine to coarse gravel; 50% medium to coarse sand; reddish brown (5 YR 5/4); loose; moist.	103.0					
10.8	0.045	-	-	-	-	Silty GRAVEL: fine to coarse gravel; reddish brown (5 YR 5/4); cohesive in places; medium dense; moist.	105.0					
34.1	0.045	-	-	-	-	GRAVEL with Sand and Silt: 70% fine to coarse gravel, subangular to subrounded; 15% sand; 15% silt; strong brown (7.5 YR 4/6); loose; dry to moist.	106.0					
26.9	0.045	-	-	-	-	Same as above except decrease in silt near 108 ft bgs.	-					
12.5	0.22	-	-	-	-	-	-					
3.9	0.133	-	-	-	-	-	-					
-	-	-	-	110	-	-	No recovery from 110 to 112 ft bgs; clayey material, slid out of sampler.	110.0	-			
-	-	-	-	-	-	-	-	-				
-	-	-	-	-	-	-	Gravelly CLAY: reddish brown (5 YR 5/3); fine to coarse gravel; stiff; moist.	112.0	-			
-	-	-	-	-	-	-	-	-				
-	-	-	-	-	-	-	Silty GRAVEL: 70% fine to coarse gravel, angular to	114.0	-			
-	-	-	-	115	-	-	-	-				

Hydrated bentonite pellets (63 to 102 ft bgs).

#10/20 sand filter pack (102 to 107 ft bgs) with 6-inch stainless steel mesh vapor probe at 104 ft bgs.

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-24

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/11/2020 - 5/15/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM					
3.4	0.19	MW-24-SB051220-119	B	-	GM		subrounded; 30% silt; light brown (7.5 YR 6/4); cemented; very dense; moist to dry.	125.0						
1.5	0.223						23.1			-	-	-	-	-
3.1	0.147						12.9			-	-	-	-	-
58.8	0.142						58.8			-	-	-	-	-
4.2	0.132						4.2			-	-	-	-	-
29.5	0.103						29.5			-	-	-	-	-
7.4	0.097						7.4			-	-	-	-	-
11.4	0.315						11.4			-	-	-	-	-
3.1	0.103						3.1			-	-	-	-	-
2.7	0.097						2.7			-	-	-	-	-
1.7	0.315	MW-24-SB051320-132	B	-	SP		SAND with Gravel: 60% fine sand; 40% well graded, fine to coarse gravel; reddish brown (5 YR 4/4); loose, moist.	130.0						
2.3	0.103						2.3			-	-	-	-	-
6.5	0.097						6.5			-	-	-	-	-
24.7	0.315						24.7			-	-	-	-	-
3.1	0.29						3.1			-	-	-	-	-
2.7	0.29						2.7			-	-	-	-	-
7	0.29						7			-	-	-	-	-
2.8	0.434						2.8			-	-	-	-	-
3.4	0.434						3.4			-	-	-	-	-
1.9	0.128						1.9			-	-	-	-	-
11.5	0.333	MW-24-SB051320-149	B	-	GW		GRAVEL with Sand and Silt: 60% fine to coarse gravel, angular to subrounded; 30% fine sand; 10% silt; reddish brown (5 YR 5/3); cemented in places; dense; moist.	140.0						
24.7	0.29						24.7			-	-	-	-	-
3.1	0.29						3.1			-	-	-	-	-
2.7	0.29						2.7			-	-	-	-	-
7	0.29						7			-	-	-	-	-
2.8	0.434						2.8			-	-	-	-	-
3.4	0.434						3.4			-	-	-	-	-
1.9	0.128						1.9			-	-	-	-	-
11.5	0.333						11.5			-	-	-	-	-
19.2	0.333						19.2			-	-	-	-	-
12.7	0.208	MW-24-SB051320-152	B	-	GM		Silty GRAVEL: cemented in places; reddish brown (5 YR 5/3); cohesive.	142.0						
12.7	0.208						12.7			-	-	-	-	-
20	0.478						20			-	-	-	-	-
8.1	0.127						8.1			-	-	-	-	-
19	0.127						19			-	-	-	-	-
17.1	0.129						17.1			-	-	-	-	-
23.4	0.129						23.4			-	-	-	-	-
4.6	0.084						4.6			-	-	-	-	-
51.1	0.084						51.1			-	-	-	-	-
10.4	0.084						10.4			-	-	-	-	-
29.3	0.073	MW-24-SB051320-152	B	-	GP		GRAVEL with SAND: fine to coarse gravel; reddish brown (5 YR 5/3); loose; wet.	150.5						
4.6	0.084						4.6			-	-	-	-	-
51.1	0.073	51.1	-	-	-	-	-	-						
10.4	0.073	10.4	-	-	-	-	-	-						
29.3	0.073	29.3	-	-	-	-	-	-						
				155										

Hydrated bentonite pellets (107 to 128 ft bgs).

#10/20 sand filter pack (128 to 133 ft bgs) with 6-inch stainless steel mesh vapor probe at 130 ft bgs.

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



555 17th Street, Suite 500  
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 (303) 383-2300

# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume

BORING/WELL NUMBER MW-24  
 DATE DRILLED 5/11/2020 - 5/15/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.5	0.383	MW24-GW051320-160		-	CL		subrounded; reddish brown (5 YR 5/4); cemented in places; medium dense.	165.0	
4.4	-			Gravelly CLAY: 60% clay, low plasticity; 40% fine gravel; cohesive; reddish brown (2.5 YR 5/4); moist to wet.					
7.4	-								
22.9	0.08			Gravelly CLAY: 50% clay; 40% fine gravel; 10% sand; reddish brown (2.5 YR 5/4); cohesive; moist.					
17.2	0.073			-					
10.5	0.074	MW-24-SB051320-166		-	GM		Silty GRAVEL with Sand: 50% fine to coarse gravel, subangular to subrounded; 30% silt; 20% sand; reddish brown (5 YR 4/4); moist.	170.0	Hydrated bentonite pellets (133 to 201 ft bgs).
14.8	0.048			-			Less sand and cemented near 168 ft bgs.		
12.1	0.032			-					
8.6	-			-					
36.1	0.08			-					
2.4	0.08	MW-24-SB051320-170		-	GW		GRAVEL with SAND: 60% fine to coarse gravel; 40% well graded sand; light brown (7.5 YR 6/4); cemented in places; dry.	172.0	
21.8	0.063			-					
16.1	0.063			-					
22.3	0.081			-					
38.7	0.081			-					
34	0.081	MW-24-SB051320-175		-	GM		Silty GRAVEL: 60% fine to coarse gravel; 40% silt; dark reddish brown (5 YR 3/4); cemented in places; moist.	174.0	
35.1	0.099			-					
36.6	0.099			-					
2.9	0.046			-					
16.9	0.046			-					
11.4	0.127	MW-24-SB051320-186		-	ML		SILT: 95% silt; 5% fine gravel; reddish brown (5 YR 4/3); very stiff; moist.	178.5	
19.6	0.127			-					
3.5	0.186			-					
10.8	0.186			-					
9.2	0.204			-					
8.6	0.204	MW-24-SB051320-186		-	ML		SILT with Gravel: 75% silt; 25% fine to coarse gravel; reddish brown (5 YR 4/3); cohesive; stiff; moist.	182.0	
26	0.25			-					
30.4	0.25			-					
10.5	0.338			-					
38.1	0.338			-					
26.2	0.338	MW-24-SB051320-186		-	GW		Increased gravel content.	188.0	
20.1	0.314			-			GRAVEL with Sand: 50% well graded gravel; 35% sand; reddish brown (5 YR 4/3); loose.		
9.7	0.314			-			Gravelly SILT: 60% silt; 40% fine to coarse gravel, subangular to subrounded; reddish brown (5 YR 5/3); slightly cohesive; moist.		
15.7	0.314			-			More cohesive and trace clay.		
23.5	0.159			-					
16.1	0.159	MW-24-SB051420-192		-	ML		Less cohesive and trace sand.	189.0	
21.3	0.063			-					
195									

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-24

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/11/2020 - 5/15/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
5.4		MW-24-SB051420-202	B		SM		Silty SAND: 70% sand; 30% silt; loose; wet. Possibly sluff.	196.7	
14	0.154						8 inch boulder.		
14.8	0.054						Silty GRAVEL: fine to coarse gravel, subangular to subrounded; cohesive; moist.		
22.6	0.13						Some grayish green staining and weakly cemented.		
16.4	0.085	MW-24-SB051420-215	B	200	GM		Moist to wet.		
12.8	0.085						Cohesive, moist.		
33.4	0.094						GRAVEL: cemented; very dense; dry.	204.0	
31.9	0.094						Silty GRAVEL with Sand: 50% fine to coarse gravel; 40% silt; 10% sand; reddish brown (5 YR 5/3); cohesive; socketed matrix; moist.	205.0	
15.2		MW-24-SB051420-215	B	205	GW		Silty GRAVEL with Sand: 50% fine to coarse gravel; 40% silt; 10% sand; reddish brown (5 YR 5/3); cohesive; socketed matrix; moist.		#10/20 sand filter pack (201 to 240 ft bgs).
16.5	0.105						Loose, wet.		
17	0.061						Silty GRAVEL: reddish brown (5YR 4/4); some 3 inch gravel, round, elongated.		
8.9	0.061						SILT: 90% silt; 10% gravel; reddish brown (5YR 4/4); soft; compact; moist.	213.0	
157		MW-24-SB051420-215	B	210	GM		Loose, wet.		
4.9	0.208						Silty GRAVEL: reddish brown (5YR 4/4); some 3 inch gravel, round, elongated.		
5.3	0.156						Boulder, dry.	214.0	
4.3	0.256						Silty GRAVEL: 60% fine to coarse gravel; 40% silt; reddish brown (5YR 4/4); loose; wet.	215.0	
6.5	0.177	MW-24-GW051420-220	B	215			Silty GRAVEL: 60% fine to coarse gravel; 40% silt; reddish brown (5YR 4/4); loose; wet.		
6.3	0.033						Silt GRAVEL with Sand: fine to coarse; reddish brown (5 YR 4/4); loose; moist.		
12	0.043						Gravelly SILT: fine gravel, subangular to subrounded; reddish brown (2.5 YR 4/4); cohesive; stiff; moist to wet.	220.0	
10.2	0.095						Less Moisture.		
1.8	0.043	MW-24-SB051420-227	B	220	ML		Less Moisture.		4-inch SCH 40 0.010-slot screen (209.5 to 239.3 ft bgs).
8.7	0.204						Fine to coarse gravel, dry to moist.		
11.2	0.095						GRAVEL with Sand: loose, cemented, dry. Possibly boulder.	228.0	
9.3	0.389						Silty GRAVEL: fine to coarse gravel, subangular to subrounded; stiff; moist.	229.0	
15.1	0.131	MW-24-SB051420-227	B	225	ML		Fine to coarse gravel, dry to moist.		
15.9	0.131						GRAVEL with Sand and Silt: 60% fine to coarse gravel, subangular to subrounded; 30% fine to coarse sand; 10% silt; reddish brown (5 YR 4/4); loose; moist.	230.0	
44.2	0.204						SILT: 75% silt; 10% sand; 10% gravel; 5% clay; brown (7.5 YR 4/4); cohesive; wet.	232.0	
23.8	0.177								
41.7	0.182	MW-24-SB051420-227	B	230	GP		GRAVEL with Sand: loose, cemented, dry. Possibly boulder.	228.0	
47.9	0.177						Silty GRAVEL: fine to coarse gravel, subangular to subrounded; stiff; moist.	229.0	
35	0.182						GRAVEL with Sand and Silt: 60% fine to coarse gravel, subangular to subrounded; 30% fine to coarse sand; 10% silt; reddish brown (5 YR 4/4); loose; moist.	230.0	
11.9	0.091	MW-24-SB051420-227	B	230	GW		GRAVEL with Sand and Silt: 60% fine to coarse gravel, subangular to subrounded; 30% fine to coarse sand; 10% silt; reddish brown (5 YR 4/4); loose; moist.	232.0	
2.1	0.091						SILT: 75% silt; 10% sand; 10% gravel; 5% clay; brown (7.5 YR 4/4); cohesive; wet.		
11.4	0.272								
7.1		MW-24-SB051420-227	B	235	ML		SILT: 75% silt; 10% sand; 10% gravel; 5% clay; brown (7.5 YR 4/4); cohesive; wet.		
10									

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-24

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/11/2020 - 5/15/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
15.8	0.222	MW-24-SB051520-239	B	18.7	GC		Clayey GRAVEL: 70% fine to coarse gravel, subrounded; 30% clay; brown (7.5 YR 4/4); cohesive; wet. Large cobble (greater than 6 inch).	235.5		
19.1	0.17			28.4	GM		Silty GRAVEL with Sand: 60% fine to coarse gravel; 20% silt; 20% sand; brown (7.5 YR 4/4); loose; wet.	237.5		
19.1	0.183			31.2	GW		GRAVEL with Sand and Silt: 60% fine to coarse gravel, subangular to subrounded; 25% sand; 15% silt; brown (7.5 YR 4/4); cemented in places; dry to moist.	239.0		
13.4	0.133			240	GM		Silty GRAVEL: 70% gravel; 30% silt; brown (7.5 YR 4/4); cohesive; wet to moist.	240.0		
6.2	0.056			14.4	ML		Silt with CLAY: 85% silt; 15% clay; brown (7.5 YR 4/4); moist.	242.0		
8.4	0.314			13.9	ML		Silty GRAVEL: 70% gravel; 30% silt; brown (7.5 YR 4/4); cohesive; wet to moist.	246.0		
9.8	0.278			20	GM		Silty GRAVEL: 70% gravel; 30% silt; brown (7.5 YR 4/4); cohesive; wet to moist.	248.0		
21	0.102			7.8	ML		Silty GRAVEL: 70% gravel; 30% silt; brown (7.5 YR 4/4); cohesive; wet to moist.	250.0		
7.2				250				End of boring at 250 ft bgs.		



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL BORING/WELL NUMBER MW-25  
 PROJECT NAME 700 S 1600 E PCE Plume DATE DRILLED 4/29/2020  
 LOCATION Salt Lake City, UT CASING TYPE/DIAMETER 1-inch SCH 80 PVC  
 DRILLING METHOD Sonic SCREEN TYPE/SLOT 1-inch SCH 80 0.020-slot  
 SAMPLING METHOD Sonic Grab GRAVEL PACK TYPE #10/20 sand  
 GROUND ELEVATION (FT MSL) 4703.04 GROUT TYPE/QUANTITY Bentonite Grout  
 TOP OF CASING (FT MSL) See Table 5 DEPTH TO WATER (FT BGS) \_\_\_\_\_  
 LOGGED BY Kimberly Myers GROUND WATER ELEVATION (FT MSL) \_\_\_\_\_  
 REMARKS A perched groundwater zone was encountered at approx. 165 ft bgs and groundwater was encountered at approx. 200 ft bgs.

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							- No recovery; vacuum excavated to 10 ft bgs.		
1.3	0.248	MW25-SB042920-14		10	GW		Well graded GRAVEL; 70% fine to coarse angular to subrounded gravel; 20% fine to coarse sand; 10% silt; loose; reddish brown (5YR 4/4); moist.	10.0	<p>← Vault with cement surface seal</p> <p>← Bentonite Grout (3.5 to 31 ft bgs).</p> <p>← 6-inch stainless steel mesh vapor probe (28 ft bgs).</p>
17.6	0.267								
5.3	0.132								
33.6	0.64								
5.4	0.359								
18.9	0.225								
19.8	0.233								
10.7	0.231								
2.8	0.317								
2.4	3.95		MW25-SB042920-29		20	GM		Silty GRAVEL; 50% fine to coarse angular to subrounded gravel; 25% fine to coarse sand; 25% silt; loose; light reddish brown (5YR 6/4); moist.	
9.4	0.81								
2.4	0.249								
4.5	0.405								
7.7	0.306								
10.2	0.278								
22.7	0.25								
16.1	0.194								
54	0.599								
34.3	0.864								
18.3	0.221			30	ML		Gravelly SILT; 60% low plasticity silt; 35% fine to coarse angular to subrounded gravel; 5% fine to medium sand; firm; dark reddish brown (5YR 3/4); dry to moist.	30.0	
27.1	3.1								
11.7	0.204								
3.7	0.016								
4.5	0.026								
				35					

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## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-25

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 4/29/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
10.1	0.088	MW25-SB042920-35	B					36.0	
9.3	0.011						Silty GRAVEL; 40% fine to coarse angular to subrounded gravel; 25% fine to coarse sand; 35% silt; loose; light reddish brown (5YR 6/4); dry to moist.		
3	0.036				GM			39.0	
1.9	1.09								
1.1	0.044			40			SILT; 85% low plasticity silt; 15% fine to coarse gravel; firm; light reddish brown (5YR 3/4); dry to moist.		
17.1	0.339				ML				
37.5	0.445								
19.1	0.435		B					44.0	
9.9	0.392			45			Gravelly SILT; 70% low plasticity silt; 25% fine gravel; 5% fine to coarse sand; firm; light reddish brown (5YR 3/4); dry to moist.		
9.4	0.244				ML				
60.1	0.479	MW25-SB042920-46	B					48.0	
5.6	0.317								
40.06	0.209					CL		CLAY; 70% low plasticity clay; 20% fine gravel; 10% fine to coarse sand; brown (7.5YR 4/4); dry to moist.	50.0
13.5	1.59			50			CLAY; 85% low plasticity clay; 10% fine gravel; 5% fine to coarse sand; dark reddish brown (5YR 3/4); dry to moist.	52.0	
20.1	0.104		B		CL				
3.8	0.246								
4.8	0.399								
12.5	0.361	MW25-SB042920-54	B					56.0	
6.7	0.191					SW		Well graded SAND; 70% fine to coarse sand; 20% silt; 10% fine subangular to subrounded gravel; brown (7.5YR 4/4); dry to moist.	
5.4	0.634				55				58.0
3.1	0.567				CL		CLAY; 70% low plasticity clay; 25% fine gravel; 5% fine to coarse sand; brown (7.5YR 4/4); dry to moist.		
1.8	0.101								
8.2	0.099								
13.8	0.11			60			Well graded SAND; 70% fine to coarse sand; 20% silt; 10% fine subangular to subrounded gravel; brown (7.5YR 4/4); dry to moist.		
2.1	9.66								
5	2.7				SW				
1.1	0.072								
6.4	0.056								
4.9	0.174		B						
3.7	0.424			65					
8.5	0.085								
7.8	0.514								
6.1	0.202				CL		CLAY; 80% low plasticity clay; 15% fine gravel; 5% fine to coarse sand; brown (7.5YR 4/4); dry to moist.	67.0	
8.1	0.177	MW25-SB042920-70	B					70.0	
1	0.148								
5.7	0.059							Well graded SAND; 70% fine to coarse well graded sand; 20% fine to coarse gravel; 10% silt; brown (7.5YR 4/4); dry to moist.	
16.6	0.005	MW25-SB042920-73	B						
12.8	0.318					SW			
1.8	0.091			75					

← Hydrated bentonite pellet seal (30 to 98 ft bgs).

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20



555 17th Street, Suite 500  
 Denver, CO 80202  
 (303) 383-2300

# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume

BORING/WELL NUMBER MW-25  
 DATE DRILLED 4/29/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM		
4.6	0.024	MW25-SB042920-82	B	-	-			77.0			
8.1	0.065			-	-	-					
2.2	0.086			-	-	CL		CLAY; 80% low plasticity clay; 15% fine gravel; 5% fine to coarse sand; brown (7.5YR 4/4); dry to moist.		79.0	
1.6	0.032			-	-	CL				79.0	
3.1	0.005			-	-	CL		CLAY; 70% low plasticity clay; 15% fine gravel; 15% fine to coarse sand; brown (7.5YR 4/4); dry to moist.		80.0	
3.1	0.718			-	-	80				80.0	
36	0.015			-	-	-	-			Well graded GRAVEL; 70% fine subangular to subrounded gravel; 25% fine to medium sand; 5% silt; compact; reddish brown (5YR 4/3); dry to moist.	
25.6	0.015			-	-	-	-				
0.1	0.093			-	-	-	-				
3.1	0.195			-	-	GW					
4.2	0.131	MW25-SB042920-94	B	85	-			89.0			
31	0.188			-	-	-	-				
7.8	0.014			-	-	-	-				
11.6	0.032			-	-	-	-				
15.3	0.569			-	-	90	CL			CLAY; 95% low plasticity clay; 5% fine to medium sand; brown (7.5YR 4/4); dry to moist.	91.5
12.4	0.428			-	-	-	-				
23.2	0.059			-	-	91.5	CL			CLAY; 85% low plasticity clay; 15% fine to medium sand; 5% fine to coarse gravel; brown (7.5YR 4/4); dry to moist.	92.5
28.7	0.056			-	-	-	-				
67.4	0.187			-	-	94.0	GC			Clayey GRAVEL; 60% fine to coarse subangular to subrounded well graded gravel; 30% low plasticity clay; 10% fine sand; reddish brown (5YR 4/3); dry to moist.	94.0
24.4	0.554			-	-	95.0	GW				95.0
12.3	0.465	MW25-SB043020-106	B	95	-		Sandy GRAVEL; 50% fine to coarse subangular to subrounded gravel; 35% fine to coarse sand; 15% silt; compact; pinkish gray (5YR 7/2); dry to moist.				
43.1	0.331			-	-	-	-				
4.7	0.28			-	-	100	GW			Well graded GRAVEL; 70% fine subangular to subrounded gravel; 25% fine to medium sand; 5% silt; compact; reddish brown (5YR 4/3); moist.	100.0
14.6	0.151			-	-	-	-				
30	0.228			-	-	-	-				
283.2	0.393			-	-	100	GW			Sandy GRAVEL; 50% fine to coarse subangular to subrounded gravel; 35% fine to coarse sand; 15% silt; compact; pinkish gray (5YR 7/2); dry to moist.	100.0
249.1	0.025			-	-	-	-				
321.4	0.362			-	-	-	-				
102.5	0.071			-	-	103.5	CL			Gravelly CLAY; 55% low plasticity clay; 10% medium to coarse sand; 35% fine to coarse gravel; reddish brown (2.5YR 4/4); dry to moist.	104.5
262.7	0.91			-	-	105	SW			Well graded SAND; 55% fine to coarse sand; 10% silt; 35% fine subangular to subrounded gravel; red (2.5YR 4/6); dry to moist.	105.5
57.1	0.453	-	-	-	CL		Gravelly CLAY; 55% low plasticity clay; 10% medium to coarse sand; 35% fine to coarse gravel; reddish brown (2.5YR 4/4); dry to moist.	107.0			
-	-	-	-	-	-		-no recovery	110.0			
33.4	0.052	MW25-SB043020-112	B	110	CL		Gravelly CLAY; 50% low plasticity clay; 45% fine to coarse gravel; 5% medium to coarse sand; firm; yellowish red (5YR 4/6); moist.	112.0			
63.4	0.139			-	-	CL		CLAY; 70% low plasticity clay; 20% fine to coarse gravel; 10% medium to coarse sand; firm; reddish brown (5YR 4/3); moist.		112.0	
2.1	0.139			-	-	-	-				
48	0.375	-	-	115	-			115.0			

Hydrated bentonite pellet seal (30 to 98 ft bgs).

6-inch stainless steel mesh vapor probe (100 ft bgs).

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



555 17th Street, Suite 500  
 Denver, CO 80202  
 (303) 383-2300

# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-25

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 4/29/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM		
22.6	0.313	MW25-SB043020-120	B		CL		Gravelly CLAY; 50% low plasticity clay; 45% fine to coarse gravel; 5% medium to coarse sand; firm; yellowish red (5YR 4/6); moist.	116.0			
22.6	0.322				SW		Gravelly SAND; 50% fine to coarse well graded sand; 40% fine gravel; 10% silt; compact; yellowish red (5YR 4/6); moist.	118.5			
27.3	0.358				GW		Well graded GRAVEL; 70% fine subangular to subrounded gravel; 20% fine to medium sand; 10% silt; compact; yellowish red (5YR 4/3); moist.	120.0			
25.9	0.303										
27.2	0.479					120					
17.8	0.083						CL			CLAY; 70% low plasticity clay; 20% fine to coarse gravel; 10% medium to coarse sand; firm; reddish brown (5YR 4/3); moist.	
13.6	0.106										
5.3	0.108										
5.8	0.248										
11.9	0.06										
12.4	0.017	MW25-SB043020-139	B	125				126.0			
3.7	0.166										
10.1	0.001										
5.5	0.126										
7.6	0.068										
14.1	0.12					130					
24	0.266						SW				
11.6	0.018										
48.4	0.186										
41.4	0.216										
18.8	0.04	MW25-SB043020-150	B	135				137.0			
37	0.012										
20.9	0.01										
66.4	0.005						ML		Sandy SILT; 60% non-plastic silt; 30% fine to coarse well graded sand; 10% coarse; firm; reddish brown (5YR 5/4); moist.	139.0	
8.4	0.355										
9.1	1.37										
6.5	0.808										
5.2	0.334										
3.5	0.372										
5.3	0.368					145					
1.6	0.16	MW25-SB050120-153	B		CL		CLAY; 70% low plasticity clay; 20% fine to coarse sand; 10% coarse sand; firm; reddish brown (5YR 4/3); moist.	143.0			
7.1	0.281										
4	0.238										
8.3	0.204										
12.2	0.033										
5.2	0.093										
17.4	0.092										
7.2	0.156										
15.5	0.156										
						155				148.0	

Hydrated bentonite pellet seal (103 to 197 ft bgs).

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume

BORING/WELL NUMBER MW-25  
 DATE DRILLED 4/29/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
18.4	0.347	MW25-SB050120-205	B		CL		gravel; 25% low plasticity clay; 15% fine sand; loose; light brown (7.5YR 4/4); dry to moist	198.5		
23.6	0.63						Gravelly CLAY; 50% low plasticity clay; 30% fine to coarse subangular to subrounded well graded gravel; 20% fine sand; brown (7.5YR 4/4); moist.			
18.2	0.211									
18.6	0.426									
29.8	0.276									
1.3	0.275			200						CLAY; 80% low plasticity clay; 15% coarse subangular to subrounded well graded gravel; 5% fine sand; brown (7.5YR 4/4); moist.
8.8	0.072									
7.1	0.105									
7.4	0.222									
13.9	0.035			205						
6.7	0.028	MW25-GW050320-212	B		CL		Sandy CLAY; 60% low plasticity clay; 40% fine to coarse well graded sand; trace gravel; brown (7.5YR 4/4); wet.	208.0		
1.6	0.249									
10.8	0.089			210				Gravelly CLAY; 70% non-plastic clay; 20% coarse gravel; 10% fine to coarse sand; reddish (5YR 4/4); moist.		210.0
11.7	0.276									
3.5	0.111	MW25-SB050320-216	B		CL		-increase gravel	215.0		
31.3	0.112									
31.6	0.035	MW25-SB050320-216	B	215	GC		Clayey GRAVEL; 60% fine to coarse angular to subrounded gravel; 15% low plasticity clay; 25% fine sand; loose; reddish brown (5YR 5/4); moist to wet	218.5		
41.6	0.058									
44.6	0.134									
8.4	0.019									
15.9	0.065	MW25-SB050320-223	B		CL		CLAY; 95% low plasticity clay; 5% fine sand; cohesive; reddish brown (5YR 4/4); moist.	220.0		
7.5	0.203									
0.9	0.331			220			GW	Well graded GRAVEL; 65% fine to coarse angular to subrounded gravel; 15% low plasticity clay; 20% fine sand; compact; reddish brown (5YR 5/4); wet		221.0
1.5	0.265									
1.7	0.142	MW25-SB050320-223	B		GC		Clayey GRAVEL; 40% fine to coarse angular to subrounded gravel; 35% low plasticity clay; 25% fine sand; compact; reddish brown (5YR 5/4); moist to wet.	225.5		
2.8	0.28									
1.9	0.052			225				CLAY; 80% low plasticity clay; 10% fine sand; 10% coarse gravel; stiff; reddish brown (5YR 5/4); moist to wet.		228.0
0.6	0.094									
0.6	0.16	MW25-GW050320-232	B		CL		Well graded GRAVEL; 65% fine to coarse angular to subrounded gravel; 15% low plasticity clay; 20% fine sand; compact; reddish brown (5YR 5/4); wet	230.0		
0.6	0.57									
0.6	0.6			230			GW	Well graded GRAVEL; 60% fine to coarse angular to subrounded gravel; 20% low plasticity clay; 20% fine sand; cohesive; compact; reddish brown (5YR 5/4); moist.		231.0
0.6	0.509									
2.4	0.171	MW25-GW050320-232	B		SW		Gravelly SAND; 50% fine to coarse well graded sand; 40% fine to coarse gravel; 10% clay; compact; yellowish red (5YR 4/6); moist.	233.0		
5.6	0.071									
4.9	0.285									
3.7	0.343									
2.3	0.067			235	GW	Well graded GRAVEL; 80% fine to coarse angular to				

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WT.JM.GPJ LAEWMN01.GDT 12/17/20



555 17th Street, Suite 500  
 Denver, CO 80202  
 (303) 383-2300

# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-25

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 4/29/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
7.3	0.129	MW25-SB050320-235	B	236.0	SW		subangular gravel; 10% low plasticity clay; 10% fine sand; cohesive; compact; reddish brown (5YR 5/4); moist.	236.0	<p>1-inch SCH 80 0.020-slot screen ZIST nested well (231 to 241 ft bgs).</p>	
4.3	0.309			236.5			Gravelly SAND; 50% fine to coarse well graded sand; 40% fine to coarse gravel; 10% clay; cemented; compact; reddish brown (5YR 4/4); moist.	236.5		
2.3	0.101							CLAY; 75% low to medium plasticity clay; 20% fine gravel; 5% fine sand; firm to stiff; reddish brown (5YR 4/4); moist.		240.0
1.8	0.259							CLAY; 80% low to medium plasticity clay; 15% fine gravel; 5% fine sand; firm to stiff; reddish brown (5YR 4/4); moist.		240.0
6.7	0.391	MW25-SB050320-246	B	240	CL		CLAY; 75% low to medium plasticity clay; 20% fine gravel; 5% fine sand; firm to stiff; reddish brown (5YR 4/4); moist.	244.0		
0.2	0.277							CLAY; 75% low to medium plasticity clay; 20% fine gravel; 5% fine sand; firm to stiff; reddish brown (5YR 4/4); moist.		244.0
2.3	0.436							CLAY; 75% low to medium plasticity clay; 20% fine gravel; 5% fine sand; firm to stiff; reddish brown (5YR 4/4); moist.		246.0
2.1	0.36							CLAY; 75% low to medium plasticity clay; 20% fine gravel; 5% fine sand; firm to stiff; reddish brown (5YR 4/4); moist.		246.0
3	0.074	MW25-GW050320-252	B	245	CL		CLAY; 75% low to medium plasticity clay; 20% fine gravel; 5% fine sand; firm to stiff; reddish brown (5YR 4/4); moist.	250.0		
1.8	0.149							Well graded GRAVEL; 50% fine to coarse angular to subangular gravel; 20% low plasticity clay; 30% fine sand; cohesive; compact; reddish brown (5YR 5/4); moist.		250.0
10.4	0.105							- increase gravel	250.0	
7.6	0.198							Well graded GRAVEL; 50% fine to coarse angular to subangular gravel; 20% low plasticity clay; 30% fine sand; cohesive; compact; reddish brown (5YR 5/4); moist.	255.0	
4.7	0.121	MW25-SB050420-264	B	250	GW		Well graded GRAVEL; 50% fine to coarse angular to subangular gravel; 20% low plasticity clay; 30% fine sand; cohesive; compact; reddish brown (5YR 5/4); moist.	255.0		
4.7	0.112							CLAY; 60% medium plasticity clay; 25% fine to coarse subangular to subround gravel; 15% fine to coarse sand; light brown (7.5YR 6/3); moist.	258.0	
1	0.118							CLAY; 80% low to medium plasticity clay; 20% fine gravel; firm to stiff; reddish brown (5YR 4/4); moist.	259.0	
2.2	0.11							CLAY; 80% low to medium plasticity clay; 15% fine gravel; 5% fine sand; firm to stiff; reddish brown (5YR 4/4); moist.	262.0	
11.5	0.208	MW25-GW050420-272	B	255	GW		CLAY; 80% low to medium plasticity clay; 20% fine gravel; firm to stiff; reddish brown (5YR 4/4); moist.	262.0		
4.3	0.207							CLAY; 90% low plasticity clay; 10% fine subrounded gravel; firm to stiff; reddish brown (5YR 4/4); moist.	271.0	
7.5	0.365							CLAY; 85% low plasticity clay; 10% fine subangular to subrounded gravel; 5% fine sand; firm to stiff; yellowish red (5YR 4/6); moist.	271.0	
8.2	0.108								271.0	
3.3	0.123	MW25-SB050520-272	B	255	CL		CLAY; 60% medium plasticity clay; 25% fine to coarse subangular to subround gravel; 15% fine to coarse sand; light brown (7.5YR 6/3); moist.	271.0		
2.1	0.567								271.0	
3.9	0.503								271.0	
1.6	0.2								271.0	
4.7	0.133	MW25-SB050520-272	B	260	CL		CLAY; 80% low to medium plasticity clay; 20% fine gravel; firm to stiff; reddish brown (5YR 4/4); moist.	271.0		
11.8	0.125								271.0	
20.2	0.074								271.0	
20.9	0.115								271.0	
25.5	0.163	MW25-SB050520-272	B	265	CL		CLAY; 90% low plasticity clay; 10% fine subrounded gravel; firm to stiff; reddish brown (5YR 4/4); moist.	271.0		
25.5	0.289								271.0	
8.5	0.005								271.0	
20.5	0.155								271.0	
18.7	0.097	MW25-SB050520-272	B	270	CL		CLAY; 85% low plasticity clay; 10% fine subangular to subrounded gravel; 5% fine sand; firm to stiff; yellowish red (5YR 4/6); moist.	271.0		
2.6	0.27								271.0	
5.8	0.42								271.0	
7.5	0.037								271.0	
17.2	0.648	MW25-SB050520-272	B	275	CL		CLAY; 85% low plasticity clay; 10% fine subangular to subrounded gravel; 5% fine sand; firm to stiff; yellowish red (5YR 4/6); moist.	271.0		
7.9	0.02								271.0	
10.9	0.282								271.0	
16.9	0.253								271.0	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-25

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 4/29/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM		
1.6	0.419	MW25-SB050520-281	B					276.0			
1.7	0						CLAY; 100% low plasticity clay; firm to stiff; yellowish red (5YR 4/6); moist.				
1.2	0										
2.3	0.419					CL					
2.5	0.413										
7.2	0.317			280				282.0			
7.1	0.196	MW25-GW050520-292	B				CLAY; 95% low plasticity clay; 15% fine subrounded to subangular gravel; firm to stiff; yellowish red (5YR 4/6); moist.				
2.1	0.144										
3.2	0.458					CL					
2.6	0.374										
2.2	0.503					285					286.0
4.7	0.315						CLAY; 100% low plasticity clay; firm to stiff; yellowish red (5YR 4/6); moist.				
0.9	0.201										
3.8	0.007										
3.6	0.099						-trace fine gravel				
0	0.057			290						Hydrated bentonite pellet seal (244 to 305 ft bgs).	
0	0.253	MW25-SB050520-299	B								
0	0.419										
1.5	0.347					CL					
12.3	0.421										
6.2	0.392					295					
7.9	0.274	MW25-SB050520-301	B				Well graded SAND and GRAVEL; 50% fine sand; 50% fine gravel; cemented; dry				
9.5	0.082					GW					
14.8	0.281									CLAY; 100% low plasticity clay; firm to stiff; yellowish red (5YR 4/6); moist.	
16.1	0.125					300					
0.5	0.232									Silty GRAVEL; 60% fine to coarse angular to subangular gravel; 30% silt; 10% fine to coarse sand; reddish brown (5YR 4/4); moist	
0.3	0						- no recovery; driller notes it was wet sand and gravel				
				305							
0	0.124	MW25-SB050620-312	B								
0	0.377										
5.1	0.746					310				Clayey SAND; 70% fine to coarse well graded sand; 25% clay; 5% fine gravel; reddish brown (2.5YR 4/4); wet.	
65.2	0.271									Silty GRAVEL; 70% fine to coarse gravel; 20% silt; 10% fine sand; reddish brown (5YR 5/3); dry	
29.4	0.656									Gravelly CLAY; 75% low to medium plasticity clay; 20% fine to coarse subangular to subrounded gravel; 5% fine sand; cohesive; stff; reddish brown (5YR 4/4); dry to moist.	
8.6	0.486										
3.9	0.618										
				315							

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20





555 17th Street, Suite 500  
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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-25

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 4/29/2020

*Continued from Previous Page*

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
14.1	0.662	MW25-GW050620-320								
42.5	0.124			-						
17.1	0.36			-				-increase gravel		318.0
53	0.193			-	GM			Silty GRAVEL; 70% fine to coarse gravel; 20% silt; 10% fine sand; pink (5YR 7/3); dry to moist.		
29.9	0.096			-				End of boring at 320 ft bgs.		320.0

WHITNEY'S BORING LOG\_SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ\_LAEVNN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL BORING/WELL NUMBER MW-26  
 PROJECT NAME 700 S 1600 E PCE Plume DATE DRILLED 4/22/2020-5/11/2020  
 LOCATION Salt Lake City, UT CASING TYPE/DIAMETER 1-inch SCH 80 PVC  
 DRILLING METHOD Sonic SCREEN TYPE/SLOT 1-inch SCH 80 0.020-slot  
 SAMPLING METHOD Sonic Grab GRAVEL PACK TYPE #10/20 sand  
 GROUND ELEVATION (FT MSL) 4713.25 GROUT TYPE/QUANTITY Bentonite Grout  
 TOP OF CASING (FT MSL) See Table 5 DEPTH TO WATER (FT BGS) \_\_\_\_\_  
 LOGGED BY Betsy Bott, Joe Miller, Ben Carreon GROUND WATER ELEVATION (FT MSL) \_\_\_\_\_  
 REMARKS Groundwater was encountered at approximately 190 feet bgs.

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							Hydrovac 0-10' bgs; no recovery.		<p>← Vault with cement surface seal</p> <p>← Bentonite Grout (4 to 34 ft bgs).</p>
1.6	0.015			10			Poorly graded GRAVEL; 80% coarse gravel; 20% silt; strong brown (7.5YR 4/6); dry.	10.0	
9.1	0.0				GP			14.0	
6.7	0.0						Silty GRAVEL; 70% coarse angular gravel; 30% silt; strong brown (7.5YR 4/6); dry.	18.0	
4.5	0.0			15	GM			20.0	
2.5	0.0						Gravelly SILT; 60% low plasticity silt; 40% fine to coarse subangular gravel; pinkish gray (7.5YR 7/2); dry.	24.5	
9.5	0.0				ML			30.0	
3.8	0.0						Gravelly SILT; 70% low plasticity silt; 30% fine to coarse subangular to rounded gravel; brown (7.5YR 6/4); dry.		
12.6	0.044	MW26-SB042220-20		20					
5.0	0.044								
76.0	0.0				ML				
131.5	0.0	MW26-SB042220-24					Gravelly SILT; 60% low plasticity silt; 40% fine subangular gravel; light brown (7.5YR 6/4); dry.		
69.6	0.0			25					
22.3	0.0								
27.7	0.0				ML				
31.1	0.0								
77.8	0.0								
3.0	0.0			30			Poorly graded GRAVEL; 85% fine to coarse gravel; 15% silt; compact; light brown (7.5YR 4/4); dry.		
9.0	0.0								
2.0	0.0								
3.0	0.0								
7	0.0								
				35					

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume

BORING/WELL NUMBER MW-26  
 DATE DRILLED 4/22/2020-5/11/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
11					GP				<p>Hydrated bentonite pellet seal (34 to 201 ft bgs).</p>
13.0	0.0								
16.0	0.01								
64.1		MW26-SB042220-39		40			Poorly graded GRAVEL; 90% fine to coarse subangular gravel; 10% silt; dense; light brown (7.5YR 6/3); dry.	40.0	
61.7	.45				GP				
90.3									
139.8	.29								
156		MW26-SB042320-44		45	GM		Silty GRAVEL; 60% fine to coarse angular poorly graded gravel; 40% silt; brown (7.5YR 4/4); dry.	44.0	
115	0.264						Gravelly SILT; 70% silt; 30% fine gravel; light brown (7.5YR 6/3); dry.	45.0	
25	0.483				ML				
43.6									
27.7	0.09						Silty GRAVEL; 60% fine to coarse angular poorly graded gravel; 40% silt; brown (7.5YR 4/4); dry.	48.0	
14.3	0.21								
5.6	0.08			50	GM				
11.1									
12.5	0.156						Silty CLAY; 80% low to medium plasticity silty clay; 20% fine gravel; stiff; brown (7.5YR 4/4); dry to moist.	52.0	
18.5									
16.4	0.26			55	CL				
21.5									
30.0		MW26-SB042320-56							
15.2	0.07				ML		SILT; 90% low plasticity silt; 10% fine gravel; soft; Brown (7.5YR 4/4); dry to moist.	57.0	
16.3	0.18								
13.0					CL		Silty CLAY; 80% low to medium plasticity silty clay; 20% fine gravel; stiff; brown (7.5YR 4/4); dry to moist.	58.5	
1.3				60					
6.5	0.080	MW26-SB042320-62			GM		Silty GRAVEL; 60% coarse subangular poorly graded gravel; 40% silt; loose; brown (7.5YR 4/4); dry.	60.0	
3.2	0.105								
0.6	0.130			65	CL		Gravelly CLAY; 60% clay; 40% fine subangular gravel; stiff; brown (7.5YR 4/4); dry to moist.	64.0	
0.130									
3.2									
1.5	.260				CL		Gravelly CLAY; 75% clay; 25% fine subangular gravel; stiff; brown (7.5YR 4/4); dry to moist.	68.0	
1.2									
9.5				70	GM		Silty GRAVEL; 60% coarse subangular poorly graded gravel; 40% silt; loose; brown (7.5YR 4/4); dry.	70.0	
6.0	0.000								
9.8							Silty GRAVEL; 70% coarse angular poorly graded gravel; 30% clayey silt; compact; brown (7.5YR 4/4); dry.	72.0	
11.2	0.000								

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-26

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 4/22/2020-5/11/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM		
11.9	0.140	MW26-SB042320-77	B	-	GM		Silty GRAVEL; 70% fine to coarse angular poorly graded gravel; 30% silt; loose; brown (7.5YR 4/4); dry.	78.0			
14.8	5.3			7.0	80.0			GM		Poorly Graded GRAVEL; 80% fine to coarse subangular to angular gravel; 10% fine sand; 10% silt; loose; light brown (7.5YR 6/3); dry	
15.1	0.160			21.9	27.3			GP			Clayey GRAVEL; 60% coarse gravel; 40% med plasticity clay; compact; brown (7.5YR 4/4); dry to moist.
39.4	0.100			19.5	18.2					90.0	
21.2	4.8	MW26-SB042320-84	B	92.0	GP	Poorly Graded GRAVEL; 80% fine to coarse subangular to subrounded gravel; 10% clay; 10% fine to medium sand; loose; brown (7.5YR 4/4); dry to moist.	90.0				
7.1	7.6			9.1			10.7	100.0		GW	GRAVEL and SAND; 40% fine to coarse subangular to subrounded well graded gravel; 40% fine to coarse sand; 20% clay; brown (7.5YR 5/4); moist.
12.1	8.8			7.9			10.0	101.5			
10.7	0.054			MW26-SB050420-103			B	103.5		CL	CLAY; 85% low plasticity clay, 10% coarse gravel; 5% fine sand; brown (7.5YR 5/4); moist to wet.
6.8	1.43	16.2	3.7		109.0	SW		Well graded SAND; 75% fine to coarse sand; 15% fine gravel; 10% clay; cemented in places, brown (7.5YR 5/4); moist to dry.			
10.9	0.516	5.0	1.1		110.0						
5.2	0.285	1.5	6.5		111.5	GM		Silty GRAVEL; 60% coarse subrounded to subangular poorly graded gravel; 40% silt; loose; light brown (7.5YR 6/4); dry.			
19.4	0.070	MW26-SB050420-103	B	114.0	GM		Well graded GRAVEL; 60% fine to coarse angular to			114.0	
15.9	0.276			115							

Hydrated bentonite pellet seal (34 to 201 ft bgs).

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume

BORING/WELL NUMBER MW-26  
 DATE DRILLED 4/22/2020-5/11/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
36.4	0.170	MW26-SB050420-116		-	GW		subrounded gravel; 25% fine to coarse sand; 15% silt; compact; moderately cemented in places; brown (7.5YR 5/4); moist.	120.0	
53.6	0.071			-					
7.6				-					
7.1		MW26-SB050420-119		-	GW		Well graded GRAVEL; 60% fine to coarse angular to subrounded gravel; 25% fine to coarse sand; 15% silt; compact; weak to moderately cemented in places; reddish brown (5YR 5/4); moist.	126.0	
109.1	3.54			120					
5.0	0.188			-					
54.3	0.214			-					
10.6	0.163			-					
15.4	0.239	MW26-SB050420-129		-	SW		Well graded SAND; %60 Fine to coarse sand; 40% fine to coarse gravel; loose; reddish brown (5YR 4/4); moist.	128.5	
10.2	0.204			125					
10.5	0.255			-					
4.2	0.157	MW26-SB050420-133		-	GC		Clayey GRAVEL; 60% fine to coarse gravel; 40% clay; very dense; moderately cemented; reddish brown (5YR 4/4); moist.	130.0	
1.9	0.094			-					
6.3	0.118			-					
24.7	0.225	MW26-SB050420-133		130	GM		Silty GRAVEL; 70% Fine to coarse gravel; 20% silt; 10% fine sand; loose; reddish brown (5YR 4/4); dry.	131.0	
13.2	0.454			-					
24.7	0.290			-					
16.4	0.294	MW26-SB050420-145		-	GW		Well graded GRAVEL; 70% fine to coarse gravel; 15% silt; 15% fine sand; slighty cohesive; brown (7.5YR 5/4); moist.	134.0	
27.3				-					
6.1	0.137			135	GM				
9.2	0.071	-							
10.9	0.264	-							
2.4		MW26-SB050420-145		-	GP		Poorly graded GRAVEL; 60% coarse subrounded to subangular poorly graded gravel; 30% fine sand; 10% silt; loose; reddish brown (2.5YR 4/4); moist.	145.0	
4.4	0.233			-					
4.5	0.145			140					
12.8		MW26-SB050420-145		-	SP		Poorly graded SAND; 60% fine to coarse sand; 30% fine gravel; 10% silt; loose; reddish brown (5YR 4/4); moist.	150.0	
8.7	0.097			-					
5.0				-					
8.7	0.152	MW26-SB050420-145		145			Well graded SAND; 50% fine to coarse sand; 40% fine to coarse subangular to subrounded gravel; 10% low plasticity clay; reddish brown (5YR 5/4); dry.	150.0	
17.0				-					
4.2	0.120			-					
5.2	0.101	MW26-SB050420-145		-	SW		Well graded SAND; 50% fine to coarse sand; 40% fine to coarse subangular to subrounded gravel; 10% low plasticity clay; reddish brown (5YR 5/4); dry.	150.0	
12.1				-					
6.7	0.163			150					
7.0	0.205	MW26-SB050420-145		-			Well graded SAND; 50% fine to coarse sand; 40% fine to coarse subangular to subrounded gravel; 10% low plasticity clay; reddish brown (5YR 5/4); dry.	150.0	
3.9	0.182			-					
14.7	0.143	MW26-SB050420-145		155					

Hydrated bentonite pellet seal (34 to 201 ft bgs).

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-26

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 4/22/2020-5/11/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
28.1	0.016	MW26-SB050520-195					brown (5YR 4/4); wet.	196.0	<p>#10/20 sand filter pack (201 to 218 ft bgs).</p> <p>1-inch SCH 80 0.020-slot screen ZIST nested well (205 to 215 ft bgs).</p> <p>Hydrated bentonite pellet seal (218 to 231 ft bgs).</p> <p>#10/20 sand filter pack (231 to 250 ft bgs).</p>
13.0	0.042						Clayey GRAVEL; 65% fine to coarse angular to subrounded gravel; 30% low to medium plasticity clay; cohesive; reddish brown (5YR 4/4); wet.		
8.3	0.003								
20.7	0.040								
5.4	0.199			200	GC		-moist to wet		
6.4	0.195	MW26-SB050620-201							
0.9	0.254								
3.5	0.200								
4.0	0.250			205			-wet		
1.3	0.407						CLAY; 80% medium to high plasticity clay; 10% silt; 10% coarse gravel; cohesive; reddish brown (5YR 4/4); dry to moist.		
1.8	0.444								
2.3	0.540								
0.8	0.373								
1.0	0.380								
5.0	0.065	MW26-GW050620-210		210	CH				
13.7	0.072								
13.7	0.020								
13.1	0.185								
16.4	0.083								
22.4	0.009	MW26-SB050620-215		215	GW		Well Graded GRAVEL; 70% fine to coarse subangular to rounded gravel; 20% fine to coarse sand; 10% silt; weakly cemented; dry.	215.0	
9.7	0.406								
4.7	0.524				MH		Clayey SILT; 70% silt; 30% medium to high plasticity clay; cohesive; stiff; reddish brown (5YR 5/4); dry to moist.	217.0	
10.1	0.179								
140	0.117	MW26-SB050620-221		220	SW		SAND and GRAVEL; 50% fine to coarse sand; 50% fine to coarse gravel; well graded; medium dense; weakly cemented; reddish brown (5YR 4/4).	220.5	
6.7	0.107						Silty GRAVEL; 70% Fine to coarse gravel; 20% silt; 10% fine to medium sand; brown (7.5YR 5/3); dry.		
10.0	0.049								
4.8	0.190			225	GM				
2.4	0.270						- 1.5-ft boulder		
0.3	0.267								
1.8	0.250				SM		Silty SAND; 50% fine to coarse sand; 30% silt; 20% fine to coarse gravel; reddish brown (5YR 4/3); wet.	228.0	
3.1	0.240			230					
1.6	0.091						Silty CLAY; 50% Low plasticity clay; 30% silt; 20% fine to coarse gravel; stiff; cohesive; reddish brown (2.5YR 4/4); moist.	230.0	
1.1	0.174								
12.0	0.214	MW26-		235	CL				

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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-26

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 4/22/2020-5/11/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
3.8	0.252	SB050620-234						236.5	<p>1-inch SCH 80 0.020-slot screen ZIST nested well (235 to 245 ft bgs).</p>
1.2	0.228								
2.1	0.195								
5.7	0.192								
0.2	0.409	MW26-GW050720-240		240	SM		Silty SAND; 50% fine to medium well graded sand; 30% silt; 20% fine to coarse gravel; dense; reddish brown (2.5YR 4/4); wet.		
0.3	0.072								
3.8	0.163								
0.9	0.052								
5.6	0.468			245	ML		Clayey SILT; 60% low plasticity silt; 30% clay; 10% fine to coarse gravel; stiff; reddish brown (5YR 5/4); dry to moist.	245.0	
27.6	0.150	MW26-SB050720-247						247.5	
0.8	0.082						SILT; 100% low plasticity silt; very dense; weakly cemented to cemented; light reddish brown (5YR 6/4); dry.	249.0	
16.2	0.161							250.0	
4.4	0.308	MW26-GW050720-250		250	CL		Silty CLAY; 50% low plasticity clay; 30% silt; 20% fine to coarse gravel; soft to stiff; reddish brown (5YR 5/4); moist.		
13.9	0.204	MW26-SB050720-251						253.0	
6.0	0.197						Sandy GRAVEL; 50% fine to coarse gravel; 40% fine sand; 10% silt; loose; pink (5YR 7/4); dry.		
9.6	0.227						Clayey SILT; 60% low plasticity silt; 20% clay; 20% coarse gravel; firm to stiff reddish brown (5YR 4/4); dry.		
2.8	0.263			255	ML			258.0	
0.9	0.688						- becomes moist		
2.3	0.304						Gravelly SAND; 50% fine to coarse well graded sand; 40% fine gravel; 10% silt; loose; reddish brown (5YR 5/4); moist.		
12.3	0.407							263.0	
0.7	0.114			260	SW			264.5	
0.6	0.158								
0.8	0.145						Silty CLAY; 60% low plasticity clay; 30% silt; 10% fine gravel; very stiff; reddish brown (5YR 5/4); dry to moist.	267.0	
1.2	0.101							264.5	
0.3	0.034			265	ML		Gravelly SILT; 70% low plasticity silt; 30% fine to coarse gravel; soft; reddish brown (5YR 4/4); moist.		
0.1	0.192							267.0	
4.9	0.158						Gravelly SILT; 50% low plasticity silt; 30% fine to coarse gravel; 20% clay; firm to stiff; reddish brown (5YR 4/4); moist.		
4.9	0.347	MW26-SB050720-269		270	ML			271.0	
9.1	0.771	MW26-GW050820-270							
10.4	0.511						Silty CLAY; 70% medium plasticity clay; 20% silt; 10% coarse gravel; soft; reddish brown (5YR 5/4); dry.		
8.6	0.635								
11.0	0.429								
2.4	0.354	MW26-		275	CH				

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-26

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 4/22/2020-5/11/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
4.5	0.369	SB050820-274	B					276.0		
5.4	0.304				ML		Clayey SILT; 70% low plasticity silt; 30% clay; firm; weakly cemented; reddish brown (5YR 5/4); dry.	277.0		
1.0	0.475	MW26-SB050820-285	B				Clayey SILT; 70% low plasticity silt; 30% clay; stiff; reddish brown (5YR 5/4); dry.	280.0	← Hydrated bentonite pellet seal (250 to 312 ft bgs).	
3.2	0.513				ML					
2.7	0.397					280				Clayey SILT; 70% low plasticity silt; 20% clay; 10% fine to coarse gravel; non-cohesive; soft; reddish brown (5YR 5/4); dry to moist.
4.3	0.503									
6.8	0.315									
5.1	0.336	MW26-SB051020-299	B					285.0		
8.9	0.225				ML					
5.7	0.306					285				Clayey SILT; 50% low plasticity silt; 40% clay; 10% fine to coarse gravel; non-cohesive; soft; reddish brown (5YR 5/4); dry to moist.
5.7	0.284									
6.5	0.401									
1.7	0.320	MW26-SB051020-308	B					290.0		
2.2	0.260				ML		Silty CLAY; 50% low to medium plasticity clay; 40% silt; 10% fine to coarse gravel; non-cohesive; firm to stiff; reddish brown (5YR 4/4); dry.			
4.4	0.233					290				
6.1	0.356									Silty CLAY; 50% low to medium plasticity clay; 40% silt; 10% fine to coarse gravel; non-cohesive; firm to stiff; reddish brown (5YR 4/4); dry.
4.1	0.514	MW26-SB051020-308	B					295.0		
3.0	0.463				CL					
5.3	0.453									
4.5	0.365									
6.8	0.271	MW26-SB051020-299	B					299.0		
3.9	0.347				CL		Silty CLAY; 50% low to medium plasticity clay; 40% silt; 10% fine to coarse gravel; non-cohesive; stiff to very stiff; reddish brown (5YR 4/4); dry.			
9.6	0.486				CH		Silty CLAY; 50% low to medium plasticity clay; 40% silt; 10% fine to coarse gravel; non-cohesive; firm to stiff; reddish brown (5YR 4/4); dry.			
17.4	0.519									Silty CLAY; 70% medium plasticity clay; 20% silt; 10% fine to coarse gravel; cohesive; stiff; reddish brown (5YR 4/4); wet.
3.3	0.353	MW26-SB051020-308	B					300.0		
22.9	0.542				CL		Silty CLAY; 70% low to medium plasticity clay; 20% silt; 10% fine to coarse gravel; cohesive; stiff; reddish brown (5YR 4/4); moist.			
19.1	0.571									
26.3	0.481									Gravelly CLAY; 40% low plasticity clay; 30% fine to coarse gravel; 20% coarse gravel; 10% silt; soft; non-cohesive; reddish brown (5YR 4/4) with pale brown mottling; dry to moist.
18.0	0.238	MW26-SB051020-308	B					302.0		
4.3	0.168				CL		Silty CLAY; 60% low plasticity clay; 20% silt; 20% fine to coarse gravel; soft; cohesive; reddish brown (5YR 4/4); dry to moist; increase moisture with depth.			
10.5	0.404									
7.0	0.131									
16.8	0.123	MW26-	B					307.0		
								310.0		
								315.0	← #10/20 sand filter pack (312 to 328 ft bgs).	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume

BORING/WELL NUMBER MW-26  
 DATE DRILLED 4/22/2020-5/11/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
2.8	0.201	SB051020-314	B	-	GW		Sandy GRAVEL; 50% fine to coarse well graded gravel; 30% fine sand; 20% clay; loose; reddish brown (5YR 4/4); wet.	317.0	
2.9	0.133						Silty GRAVEL; 50% fine to coarse gravel; 30% silt; 20% fine sand; compact; non-cohesive		
6.8	0.044	MW26-GW051020-320	B	320	GM		Silty GRAVEL; 50% fine to coarse gravel; 30% silt; 20% fine sand; compact; non-cohesive	320.0	
3.7	0.032						Sandy GRAVEL; 50% fine to coarse well graded gravel; 40% fine sand; 10% clay; loose; reddish brown (5YR 4/4); wet.		
3.2	0.245						Gravelly CLAY; 50% low plasticity clay; 30% fine to coarse gravel; 20% coarse sand; soft; cohesive; reddish brown (5YR 4/4); moist.		
3.8	0.223						GW		
5.5	0.224	MW26-SB051120-329	B	325	CL		-moist to wet	323.0	
13.1	0.184						Silty CLAY; 50% low plasticity clay; 30% silt; 20% coarse gravel; stiff; non-cohesive; reddish brown (5YR 4/4); dry.		
11.0	0.220						CL		
18.5	0.089	MW26-SB051120-334	B	330	CL		Silty CLAY; 50% low plasticity clay; 30% silt; 20% coarse gravel; stiff; non-cohesive; reddish brown (5YR 4/4); dry.	330.0	
11.0	0.106						CL		
19.7	0.198	MW26-SB051120-334	B	335	GW		Sandy GRAVEL; 50% fine to coarse well graded gravel; 30% coarse sand; 20% clay; non-cohesive; loose; reddish brown (5YR 5/4); dry.	335.0	
14.9	0.249						GW		
18.8	0.145	MW26-SB051120-348	B	340	GW		Sandy GRAVEL; 40% fine to coarse well graded gravel; 30% coarse sand; 30% clay; non-cohesive; loose; reddish brown (5YR 5/4); wet.	343.0	
29.2	0.179						GW		
36.5	0.316						GW		
33.4	0.199	MW26-SB051120-348	B	345	GW		Sandy GRAVEL; 40% fine to coarse well graded gravel; 30% coarse sand; 30% clay; non-cohesive; loose; reddish brown (5YR 5/4); moist.	347.5	
33.7	0.201						GW		
17.8	0.089	MW26-SB051120-348	B	350	SW		Gravelly SAND; 70% coarse sand; 30% fine well graded gravel; loose; moist; very dark gray (5YR 3/1); moist.	350.0	
32.0	0.084						SW		
31.6	3.40	MW26-SB051120-348	B	352.0	CH		Gravelly CLAY; 60% medium plasticity clay; 30% fine to coarse gravel; 10% coarse sand; soft; cohesive; reddish brown (5YR 5/4); moist.	352.0	
82.2	0.301						CH		
129	3.15	MW26-SB051120-348	B	355	CH		Gravelly CLAY; 60% medium plasticity clay; 30% fine to coarse gravel; 10% coarse sand; soft; cohesive; reddish brown (5YR 5/4); wet.	352.0	
149.4	0.565						CH		
10.6	0.308						CH		
2.1	0.309	MW26-SB051120-348	B	355	CH		Gravelly CLAY; 60% medium plasticity clay; 30% fine to coarse gravel; 10% coarse sand; soft; cohesive; reddish brown (5YR 5/4); wet.	352.0	
0.6	0.197						CH		
1.3	0.188	MW26-SB051120-348	B	355	CH		Gravelly CLAY; 60% medium plasticity clay; 30% fine to coarse gravel; 10% coarse sand; soft; cohesive; reddish brown (5YR 5/4); wet.	352.0	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-26

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 4/22/2020-5/11/2020

*Continued from Previous Page*

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
20.5	0.193	MW26-SB051220-355		-	CH			358.0	
15.3	0.127			-					
10.0	0.248			-					
9.6	0.257			-	CL		Gravelly CLAY; 60% low plasticity clay; 30% fine to coarse gravel; 10% coarse sand; soft; cohesive; reddish brown (5YR 5/4); dry to moist.	360.0	
		360		End of boring 360 ft bgs.					

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL BORING/WELL NUMBER MW-27  
 PROJECT NAME 700 S 1600 E PCE Plume DATE DRILLED 3/20/2020 - 3/22/20  
 LOCATION Salt Lake City, UT CASING TYPE/DIAMETER 4-inch SCH 40 PVC  
 DRILLING METHOD Sonic SCREEN TYPE/SLOT 4-inch SCH 40 0.010-Slot  
 SAMPLING METHOD Sonic Grab GRAVEL PACK TYPE #10/20 sand  
 GROUND ELEVATION (FT MSL) 4712.61 GROUT TYPE/QUANTITY Bentonite Grout  
 TOP OF CASING (FT MSL) See Table 5 DEPTH TO WATER (FT BGS) \_\_\_\_\_  
 LOGGED BY Kimberly Myers GROUND WATER ELEVATION (FT MSL) \_\_\_\_\_  
 REMARKS A perched groundwater zone was encountered at approx. 150 ft bgs and groundwater was encountered at approx. 190 ft bgs.

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							Hydrovac excavation, no recovery		
				5					
				10					
2.4	0.259	MW27-SB032220-13		11.0	SC		Clayey SAND; 50% well graded fine to coarse sand; 30% low plasticity clay; 20% fine to coarse subrounded to subangular gravel; reddish brown (5YR 4/4); dry.	11.0	← Vault with cement surface seal ← Bentonite Grout (3.5 to 31 ft bgs).
2.1				15.0				15.0	
2.5				15	SC		Clayey SAND; 50% well graded fine to coarse sand; 20% low plasticity clay; 30% fine to coarse subrounded to subangular gravel; reddish brown (5YR 4/4); moist.		
6.3	0.042	MW27-SB032220-16	B	20.0				20.0	
4.2				20	CL		CLAY; 70% low plasticity clay; 15% fine subrounded to subangular gravel; 5% fine sand; reddish brown (5YR 4/4); moist.	20.0	
3.4				21.5				21.5	
2.4				25	CH		CLAY; 70% high plasticity clay; 20% fine to coarse subrounded to subangular gravel; 10% coarse sand; reddish brown (5YR 4/4); moist.		← Hydrated bentonite seal (11 to 25 ft bgs).
5.6				25					
9.2				28.0				28.0	
4.9				28	SP		SAND with Gravel; 85% poorly graded medium sand; 15% fine to coarse subrounded to subangular gravel; reddish brown (5YR 4/4); moist.		
7.2				30				30.0	← 6" soil vapor point at 28 ft bgs; #10/20 sand filter pack
10.6				30					
5.1				30					
4.1	0.060	MW27-SB032220-30		30			Gravelly CLAY; 50% high plasticity clay; 40% fine to coarse subrounded to subangular gravel; 10% fine to coarse sand; brown (7.5 YR 4/3); dry.		
13.2				35					
5.5				35					
3.0				35					
1.9				35					
0.8				35					

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-27

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 3/20/2020 - 3/22/20

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
1.7									
2.3								38.5	
3.0	0.020	MW27-SB032220-40		40	GC		Clayey GRAVEL; 50% coarse subrounded to subangular gravel; 30% fine to coarse sand; 20% low plasticity clay; brown (7.5 YR 4/3); dry.		Hydrated bentonite seal (31 to 44 ft bgs).
3.9									
9.0									
8.1									
5.6				45					
5.2									
11.1								48.0	6" soil vapor point at 48 ft bgs; #10/20 sand filter pack
22.1									
44.0	0.073	MW27-SB032220-50		50	GC		Clayey GRAVEL; 40% coarse subrounded to subangular gravel; 40% low plasticity clay; 20% fine to coarse sand; brown (7.5 YR 4/3); dry.		
1.3								51.0	
5.2									
3.1					CH		CLAY; 90% high plasticity clay; 10% fine gravel; brown (7.5 YR 5/3); moist.		
3.1								53.5	
11.4	0.061	MW27-SB032220-54.5		55	CL		CLAY; 70% low plasticity clay; 25% fine to coarse subrounded to subangular gravel; 5% coarse sand; brown (7.5YR 5/3); moist.		
6.5								56.0	
0.5									
2.5							Well graded SAND; 80% fine to coarse sand; 15% fine to coarse subrounded to subangular gravel; 5% low plasticity clay; brown (7.5YR 5/3); moist.		
3.7									
0.3							- 6" clay layer		
1.2	0.081			60	SW				
0.7									
1.4	0.00								
0.7	0.00								
2.8	0.00			65					
4.4	0.00							67.0	
7.0	0.158				CL		CLAY; 75% low plasticity clay; 20% fine to coarse subrounded to subangular gravel; 5% fine to coarse sand; brown (7.5YR 5/3); moist.		
1.5	1.59	MW27-SB032220-70		70	SW		SAND and GRAVEL; 50% well graded fine sand; 45% fine to coarse subrounded to subangular gravel; 5% low plasticity clay; brown (7.5YR 5/3); moist.		
3.0	0.658							70.0	
9.4					CL		Gravelly CLAY; 50% low to medium plasticity clay; 40% fine to coarse subrounded to subangular gravel; 10% coarse sand; brown (7.5YR 5/3); moist.		
20.9	0.119	MW27-		75			Gravelly CLAY; 60% high plasticity clay; 30% fine to coarse	72.0	
								73.5	
									Hydrated bentonite seal (51 to 73 ft bgs).

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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume

BORING/WELL NUMBER MW-27  
 DATE DRILLED 3/20/2020 - 3/22/20

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
15.9	0.112	SB032220-75	B	-	CH		subrounded to subangular gravel; 10% coarse sand; reddish brown (5YR 4/4); moist.	77.5	
4.9	0.083			-	SW		SAND and GRAVEL; 40% fine sand; 40% fine to coarse subrounded to subangular gravel; 20% low plasticity clay; brown (7.5YR 5/3); moist.	81.0	
0.9	0.330			80	CL		CLAY; 80% medium plasticity clay; 15% fine to coarse subrounded to subangular gravel; 5% fine sand; brown (reddish brown (5YR 4/4); moist.	82.0	
1.0	0.130	MW27-SB032220-88	B	-	SW		SAND and GRAVEL; 40% well graded fine sand; 40% fine to coarse subrounded to subangular gravel; 20% low plasticity clay; brown (7.5YR 5/3); moist.	85.0	
3.1	1.04			-	CH		CLAY; 85% high plasticity clay; 10% fine sand; 5% fine gravel; brown (7.5YR 5/3); moist.	90.0	
7.7	0.325			85	CH		Gravelly CLAY; 50% high plasticity clay; 50% fine to coarse well graded gravel; brown (7.5YR 5/3); wet.	98.0	
6.7	0.325	MW27-SB032220-96	B	-	CH		Gravelly CLAY; 40% low plasticity clay; 40% fine to coarse subrounded to subangular well graded gravel; 20% fine to medium sand; reddish brown (5YR 4/4); moist	100.0	
8.3	0.360			-	CH		Gravelly CLAY; 50% high plasticity clay; 50% fine to coarse well graded gravel; brown (7.5YR 5/3); wet.	105.0	
10.7	0.179			90	CL		Gravelly CLAY; 40% low plasticity clay; 40% fine to coarse subrounded to subangular well graded gravel; 20% fine to medium sand; reddish brown (5YR 4/4); moist	110.0	
11.1	0.620	MW27-SB032320-102	B	-	SW		SAND and GRAVEL; 50% well graded fine to coarse sand; 40% fine to coarse subrounded to subangular gravel; 10% low plasticity clay; strong brown (7.5YR 4/6); moist.	105.0	
0.3	0.960			-	CL		Gravelly CLAY; 40% low plasticity clay; 40% fine to coarse subrounded to subangular gravel; 20% fine to medium sand; brown (7.5YR 4/4); moist.	110.0	
2.9	1.08			100	CL		SAND and GRAVEL; 50% well graded fine to coarse sand; 40% fine to coarse subrounded to subangular gravel; 10% low plasticity clay; strong brown (7.5YR 4/6); moist.	113.0	
2.9	1.12	MW27-	B	-	SW		SAND and GRAVEL; 50% well graded fine to coarse sand; 40% fine to coarse subrounded to subangular gravel; 10% low plasticity clay; strong brown (7.5YR 4/6); moist.	110.0	
6.5	0.992			-	CL		Gravelly CLAY; 40% low plasticity clay; 40% fine to coarse subrounded to subangular gravel; 20% fine to medium sand; brown (7.5YR 4/4); moist.	113.0	
6.2	0.572			105	CL		SAND and GRAVEL; 50% well graded fine to coarse sand; 40% fine to coarse subrounded to subangular gravel; 10% low plasticity clay; strong brown (7.5YR 4/6); moist.	113.0	
1.5	0.224	MW27-	B	-	SW		SAND and GRAVEL; 50% well graded fine to coarse sand; 40% fine to coarse subrounded to subangular gravel; 10% low plasticity clay; strong brown (7.5YR 4/6); moist.	110.0	
55	0.218			-	CL		Gravelly CLAY; 40% low plasticity clay; 40% fine to coarse subrounded to subangular gravel; 20% fine to medium sand; brown (7.5YR 4/4); moist.	113.0	
25.3	0.122			110	CL		SAND and GRAVEL; 50% well graded fine to coarse sand; 40% fine to coarse subrounded to subangular gravel; 10% low plasticity clay; strong brown (7.5YR 4/6); moist.	113.0	
32.7	0.179	MW27-	B	-	SW		SAND and GRAVEL; 50% well graded fine to coarse sand; 40% fine to coarse subrounded to subangular gravel; 10% low plasticity clay; strong brown (7.5YR 4/6); moist.	110.0	
21.9	0.255			-	CL		Gravelly CLAY; 40% low plasticity clay; 40% fine to coarse subrounded to subangular gravel; 20% fine to medium sand; brown (7.5YR 4/4); moist.	113.0	
16.7	0.169			105	CL		SAND and GRAVEL; 50% well graded fine to coarse sand; 40% fine to coarse subrounded to subangular gravel; 10% low plasticity clay; strong brown (7.5YR 4/6); moist.	113.0	
16.6	0.121	MW27-	B	-	SW		SAND and GRAVEL; 50% well graded fine to coarse sand; 40% fine to coarse subrounded to subangular gravel; 10% low plasticity clay; strong brown (7.5YR 4/6); moist.	110.0	
10.2	0.186			-	CL		Gravelly CLAY; 40% low plasticity clay; 40% fine to coarse subrounded to subangular gravel; 20% fine to medium sand; brown (7.5YR 4/4); moist.	113.0	
3.4	0.137			110	CL		SAND and GRAVEL; 50% well graded fine to coarse sand; 40% fine to coarse subrounded to subangular gravel; 10% low plasticity clay; strong brown (7.5YR 4/6); moist.	113.0	
4.4	0.061	MW27-	B	-	SW		SAND and GRAVEL; 50% well graded fine to coarse sand; 40% fine to coarse subrounded to subangular gravel; 10% low plasticity clay; strong brown (7.5YR 4/6); moist.	110.0	
41.3	5.96			-	CL		Gravelly CLAY; 40% low plasticity clay; 40% fine to coarse subrounded to subangular gravel; 20% fine to medium sand; brown (7.5YR 4/4); moist.	113.0	
66.9	0.307			110	CL		SAND and GRAVEL; 50% well graded fine to coarse sand; 40% fine to coarse subrounded to subangular gravel; 10% low plasticity clay; strong brown (7.5YR 4/6); moist.	113.0	
62.9	0.341	MW27-	B	-	SW		SAND and GRAVEL; 50% well graded fine to coarse sand; 40% fine to coarse subrounded to subangular gravel; 10% low plasticity clay; strong brown (7.5YR 4/6); moist.	110.0	
103.1	0.204			-	CL		Gravelly CLAY; 40% low plasticity clay; 40% fine to coarse subrounded to subangular gravel; 20% fine to medium sand; brown (7.5YR 4/4); moist.	113.0	
33.2	0.201			115	CL		SAND and GRAVEL; 50% well graded fine to coarse sand; 40% fine to coarse subrounded to subangular gravel; 10% low plasticity clay; strong brown (7.5YR 4/6); moist.	113.0	

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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-27

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 3/20/2020 - 3/22/20

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
42.4	0.237	MW27-SB032320-158	B	156.0	GW		GRAVEL and SAND; 45% well graded fine to coarse sand; 45% fine to coarse subrounded to subangular gravel; 10% low plasticity clay; reddish brown (5YR 4/4); moist.	156.0	
64.5	0.194			157.0	CL		Gravelly CLAY; 40% low plasticity clay; 40% fine to coarse subrounded to subangular well graded gravel; 20% fine to medium sand; reddish brown (5YR 4/4); moist.	157.0	
17.1	0.131			159.0	GW		GRAVEL and SAND; 45% well graded fine to coarse sand; 45% fine to coarse subrounded to subangular gravel; 10% low plasticity clay; reddish brown (5YR 4/4); moist.	159.0	
1.1	0.776			160.0	CL		Gravelly CLAY; 40% low plasticity clay; 40% fine to coarse subrounded to subangular well graded gravel; 20% fine to medium sand; reddish brown (5YR 4/4); moist.	160.0	
18.1	0.529	MW27-SB032320-166	B	163.5	GW		GRAVEL and SAND; 45% well graded fine to coarse sand; 45% fine to coarse subrounded to subangular gravel; 10% low plasticity clay; reddish brown (5YR 4/4); moist.	163.5	
35.0	3.39			165.0	CL		Gravelly CLAY; 40% low plasticity clay; 40% fine to coarse subrounded to subangular well graded gravel; 20% fine to medium sand; reddish brown (5YR 4/4); moist.	165.0	
11.4	0.244			168.0	GW		GRAVEL and SAND; 40% well graded fine to coarse sand; 40% fine to coarse subrounded to subangular gravel; 20% low plasticity clay; reddish brown (5YR 4/4); wet.	168.0	
30.7	0.670	MW27-GW032320-168	B	170.0	CL		Gravelly CLAY; 50% low to medium plasticity clay; 40% fine to coarse subrounded to subangular well graded gravel; 10% medium sand; reddish brown (5YR 4/4); moist.	170.0	
11.2	0.705			174.0	GW		GRAVEL and SAND; 45% well graded fine to coarse sand; 45% fine to coarse subrounded to subangular gravel; 10% low plasticity clay; reddish brown (5YR 4/4); moist.	174.0	
8.6	1.23			175.0	CL		Gravelly CLAY; 60% high plasticity clay; 35% fine to coarse well graded gravel; 5% medium sand; reddish brown (5YR 4/4); moist.	175.0	
7.3	1.66			177.0	GC		Clayey GRAVEL; 50% fine to coarse subrounded to subangular well graded gravel; 30% low plasticity clay; 20% medium to coarse sand; reddish brown (5YR 4/4); moist.	177.0	
9.2	1.06	MW27-SB032320-175	B	180.0	CH		Clayey GRAVEL; 40% fine to coarse subrounded to subangular well graded gravel; 30% low plasticity clay; 30% medium to coarse sand; reddish brown (5YR 4/4); moist.	180.0	
30.4	0.242			184.0	GC		Clayey GRAVEL; 50% fine to coarse subrounded to subangular well graded gravel; 30% low plasticity clay; 20% medium to coarse sand; reddish brown (5YR 4/4); moist.	184.0	
29.1	0.204			185.0	CH		Gravelly CLAY; 60% high plasticity clay; 35% fine to coarse well graded gravel; 5% medium sand; reddish brown (5YR 4/4); moist.	185.0	
27.3	0.199			189.5	GC		Clayey GRAVEL; 40% fine to coarse subrounded to subangular well graded gravel; 30% low plasticity clay; 30% medium to coarse sand; reddish brown (5YR 4/4); moist.	189.5	
20.4	0.179	MW27-SB032420-185	B	192.0	CH		Gravelly CLAY; 60% high plasticity clay; 35% fine to coarse well graded gravel; 5% medium sand; reddish brown (5YR 4/4); moist.	192.0	
12.6	0.115			195.0	GC		Clayey GRAVEL; 40% fine to coarse subrounded to subangular well graded gravel; 30% low plasticity clay; 30% medium to coarse sand; reddish brown (5YR 4/4); moist.	195.0	
16.5	0.081			197.0	CH		Gravelly CLAY; 60% high plasticity clay; 35% fine to coarse well graded gravel; 5% medium sand; reddish brown (5YR 4/4); moist.	197.0	
51.4	4.05			199.5	GC		Clayey GRAVEL; 40% fine to coarse subrounded to subangular well graded gravel; 30% low plasticity clay; 30% medium to coarse sand; reddish brown (5YR 4/4); moist.	199.5	
60.6	0.061	MW27-SB032420-192.5	B	199.5	CH		Gravelly CLAY; 60% high plasticity clay; 35% fine to coarse well graded gravel; 5% medium sand; reddish brown (5YR 4/4); moist.	199.5	
22.1	0.150			200.0	GC		Clayey GRAVEL; 40% fine to coarse subrounded to subangular well graded gravel; 30% low plasticity clay; 30% medium to coarse sand; reddish brown (5YR 4/4); moist.	200.0	
43.8	0.196			200.0	CH		Gravelly CLAY; 60% high plasticity clay; 35% fine to coarse well graded gravel; 5% medium sand; reddish brown (5YR 4/4); moist.	200.0	
80.8	0.154	MW27-SB032420-192.5	B	200.0	GC		Clayey GRAVEL; 40% fine to coarse subrounded to subangular well graded gravel; 30% low plasticity clay; 30% medium to coarse sand; reddish brown (5YR 4/4); moist.	200.0	
53.8	0.424			200.0	CH		Gravelly CLAY; 60% high plasticity clay; 35% fine to coarse well graded gravel; 5% medium sand; reddish brown (5YR 4/4); moist.	200.0	
18.5	1.37	MW27-SB032420-192.5	B	200.0	GC		Clayey GRAVEL; 40% fine to coarse subrounded to subangular well graded gravel; 30% low plasticity clay; 30% medium to coarse sand; reddish brown (5YR 4/4); moist.	200.0	
28.6	0.231			200.0	CH		Gravelly CLAY; 60% high plasticity clay; 35% fine to coarse well graded gravel; 5% medium sand; reddish brown (5YR 4/4); moist.	200.0	
19.7	0.654	MW27-SB032420-192.5	B	200.0	GC		Clayey GRAVEL; 40% fine to coarse subrounded to subangular well graded gravel; 30% low plasticity clay; 30% medium to coarse sand; reddish brown (5YR 4/4); moist.	200.0	
32.5	0.654			200.0	CH		Gravelly CLAY; 60% high plasticity clay; 35% fine to coarse well graded gravel; 5% medium sand; reddish brown (5YR 4/4); moist.	200.0	
17.6				195.0					

Hydrated bentonite pellet seal (157 to 197 ft bgs).

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-27

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 3/20/2020 - 3/22/20

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
7.8	0.128				CH				
17.9	0.170								
12.0									
19.7	1.99			200			-Low recovery, sample slid out of core barrel; wet.	200.0	<p>#10/20 sand filter pack (197 to 220 ft bgs).</p> <p>4-inch SCH 40 0.010-slot screen well (200 to 220 ft bgs).</p>
2.4	4.29	MW27-GW032420-210		210	GW		Well graded GRAVEL; 80% fine to coarse subrounded to subangular gravel; 10% fine sand; 10% low plasticity clay; reddish brown (5YR 4/4); wet.	210.0	
1.0	0.436								
0.8	0.868			215			Gravelly CLAY; 40% low plasticity clay; 30% medium to coarse sand; 30% fine to coarse subrounded to subangular well graded gravel; reddish brown (5YR 4/4); wet.	215.0	
0.3					CL				
4.2		MW27-SB032420-218							
1.2	0.178	MW27-GW032420-220		220			End of boring at 220 ft bgs.	220.0	

WHITNEY'S BORING LOG\_SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ\_LAEVNN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL BORING/WELL NUMBER MW-28  
 PROJECT NAME 700 S 1600 E PCE Plume DATE DRILLED 3/11/2020 - 3/18/2020  
 LOCATION Salt Lake City CASING TYPE/DIAMETER 4-inch SCH 40 PVC  
 DRILLING METHOD Sonic SCREEN TYPE/SLOT 4-inch SCH 40 0.010-Slot  
 SAMPLING METHOD Sonic Grab GRAVEL PACK TYPE #10/20 sand  
 GROUND ELEVATION (FT MSL) 4712.80 GROUT TYPE/QUANTITY Bentonite Grout  
 TOP OF CASING (FT MSL) See Table 5 DEPTH TO WATER (FT BGS) \_\_\_\_\_  
 LOGGED BY Joe Miller GROUND WATER ELEVATION (FT MSL) \_\_\_\_\_  
 REMARKS A perched groundwater zone was encountered at approx. 150 ft bgs and groundwater was encountered at approx. 185 ft bgs.

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ\_LAEWNN01.GDT 12/17/20

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							No recovery. Hydrovac clearing from 0-10' bgs.		
				5					
3.4		MW28-SB031220-14		10	GM		Silty GRAVEL; 60% well graded fine to coarse gravel; 30% Silt; 5% fine sand; non-cohesive, light brownish gray (10YR 6/2), dry.	10.0	
4.2								11.5	
3.1					ML		Gravelly SILT; 55% silt; 35% fine to coarse gravel; 10% fine sand; non-cohesive; reddish brown (5YR 5/3); dry.	13.0	
6.8									
14.1		MW28-SB031220-16		15	GM		Silty GRAVEL; 50% well graded fine to coarse gravel; 25% Silt; 25% fine sand; non-cohesive, reddish brown (5YR 5/3), dry.		
20.1								17.0	
6.6									
10.6									
12.8					GW		Well Graded GRAVEL; 50% fine to coarse gravel; 40% fine sand; 10% silt; rounded 6" cobble, light brown (7.5YR 6/3), dry.		
				20				21.0	
5.7									
48.2		MW28-SB031220-22			GM		Silty GRAVEL; 50% well graded fine to coarse gravel; 30% Silt; 20% fine sand; weakly cemented; subrounded clasts; reddish brown (5YR 5/3), dry.		
41.6								24.5	
33.1				25	SW		Well graded SAND; 55% fine to medium sand; 40% fine to coarse gravel; 5% silt; loose, light brown (7.5YR 6/3), moist.		
2.0								28.0	
2.2									
4.6									
5.0									
13.2				30					
8.5					GC		Clayey GRAVEL; 70% fine to coarse gravel; 30% silty clay; low plasticity; light brown (7.5YR 6/3); moist		
13.7		MW28-		35					

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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-28

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 3/11/2020 - 3/18/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
8.0		SB031220-35			GM		Silty GRAVEL; 60% fine to coarse well graded gravel; 30% silt; 10% fine sand; medium dense; reddish brown (5YR 5/4); moist	36.0	<p>Hydrated bentonite pellet seal (27 to 45 ft bgs).</p> <p>6" soil vapor point at 48 ft bgs; #10/20 sand filter pack</p>
1.2					SW		Well graded SAND; 60% fine to coarse sand; 35% fine to coarse gravel; 5% silt; loose, light gray (7.5YR 7/1); moist.	38.0	
14.2					GM		Silty GRAVEL; 70% well graded fine to coarse gravel; 30% Silt; 2non-cohesive, reddish brown (5YR 5/3); moist.	40.0	
11.8		MW28-SB031320-49		40	ML		Gravelly SILT; 70% silt; 30% fine to coarse gravel; slightly cohesive; stiff; reddish brown (5YR 5/3); moist.	41.0	
16.8							Well graded GRAVEL; 65% fine to coarse gravel; 30% fine to medium sand; 5% silt; reddish brown (5YR 5/4); moist.	43.0	
14.8					45	GW			
27.9							-10-12" cobble	49.0	
3.5		MW28-SB031320-59		50			Well graded GRAVEL 75% fine to coarse gravel; 20% medium to coarse sand; 5% silt; loose; light brownish gray (10YR 6/2); dry.	56.0	
5.8					GW			58.5	
7.4								62.0	
3.8		MW28-SB031320-67		55	GM		Silty GRAVEL; 60% fine to coarse subangular gravel; 35% silt; 5% fine sand; socketed matrix; slightly cohesive; light brownish gray (10YR 6/2); moist.	65.5	
3.5					GM		Silty GRAVEL; 45% fine to coarse subangular gravel; 35% silt; 20% fine sand; slightly cohesive; reddish brown (5YR 5/4); FeO staining; moist.	69.0	
4.1					GW		Sandy GRAVEL; 45% fine to coarse well graded gravel; 30% fine sand; 15% silt; loose; light brown (7.5YR 6/3); moist.	71.0	
1.8				60	SP		Poorly graded SAND; 60% fine sand; 40% fine to coarse gravel; loose to weakly cemented in places; light brown (7.5YR 6/3); moist.		
3.3									
2.1					65	ML		Clayey SILT; 60% clayey silt; 40% fine to coarse gravel; trace green staining; cohesive; brown (7.5YR 4/3); moist.	
2.3				65			Well Graded GRAVEL; 50% fine to coarse gravel; 45% fine sand; 5% silt; subrounded clasts; loose; light brownish gray (10YR 6/2); moist.		
5.6									
7.4					70	GW			
9.6									
7.4				75					
3.1									
2.1									
0.8									
0.9									

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-28

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 3/11/2020 - 3/18/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
1.2		MW28-SB031320-86						77.0	<p>Hydrated bentonite pellet seal (51 to 114.6 ft bgs).</p>
1.2					ML		Clayey SILT; 90% clayey silt; 10% fine to coarse gravel; soft; cohesive; brown (7.5YR 4/3); moist.	78.0	
2.3					ML		SILT; 50% Silt; 40% fine to coarse sand; 10% fine to coarse gravel; cohesive; stiff; brown (7.5YR 4/3); moist.	80.0	
1.1		MW28-SB031320-86		80			Silty GRAVEL; 60% fine to coarse, subrounded to subangular gravel; 20% silt; 20% fine sand; medium dense; light brown (7.5YR 6/3); dry.		
2.0					GM				
3.9					85				
5.1		MW28-SB031320-86					Silty GRAVEL; 60% fine to coarse, subrounded to subangular gravel; 30% silt; 10% fine sand; slightly cohesive; light gray (7.5YR 7/1), some red straining; moist.		
1.6					GM				
3.1					88.5				
11.3		MW28-SB031320-86					Well Graded GRAVEL; 60% fine to coarse gravel; 40% fine to coarse sand; 10% silt; loose; light brownish gray (10YR 6/2); moist.		
2.8					GW				
3.9					90				
6.1		MW28-SB031320-86					Silty GRAVEL; 50% fine to coarse, subrounded to angular gravel; 30% silt; 20% fine sand; slightly cohesive; stiff; brown (7.5YR 4/3); moist.		
6.1									
8.1					95				
10.0		MW28-SB031320-97							
1.6	0.019								
4.0					100				101.0
10.4	0.015	MW28-SB031320-97					Gravelly SAND with Silt; 55% fine to coarse sand; 30% coarse gravel; 15% silt; light brown (7.5YR 6/3); moist.		
10.7	0.023								
5.8	0.000								
10.1		MW28-SB031320-97							
9.2	0.017				SW SM				
19.4	0.058				105				105.0
39.0	0.073	MW28-SB031320-97					Sandy GRAVEL; 60% well graded fines to coarse gravel; 40% fine to coarse sand; moderately cemented; very dense; light gray (7.5YR 7/1); dry.		
1.9	0.041								
2.9	0.025				107.0				107.0
1.8	0.054	MW28-SB031520-107					Gravelly SAND with Silt; 55% fine sand; 30% fine to coarse gravel; 15% silt; loose; light brownish gray (10YR 6/2); moist.		
3.2	0.035				SM				
81.5	0.011				110				111.0
42.5	0.027	MW28-SB031520-107					SILT; 60% silt; 40% fine to coarse gravel; stiff; cohesive; brown (7.5YR 4/3); moist.		
46.2	0.031								
113.2	0.018				115				115.0

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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-28

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 3/11/2020 - 3/18/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
116.2	0.024	MW28-SB031520-117		-	GW		Well graded GRAVEL; 70% fine to coarse, subrounded to subangular gravel; 30% fine to coarse sand; light gray (7.5YR 7/1); moist.	120.0	
130.3	0.028			-					
117	0.054			-					
175	0.195	MW28-SB031620-121		120	ML		SILT; 45% silt; 35% fine to coarse gravel; 20% fine sand; slightly cohesive; weakly cemented in places; reddish brown (5YR 5/4); moist.	128.0	
55.1	0.043			-					
33.8	0.078			-					
31.8	0.278			-					
12.2	0.185	MW28-SB031620-139		-	GM		Silty GRAVEL; 50% fine to coarse gravel; 40% silt; 10% fine sand; dense; weakly cemented; grayish brown (10YR 5/2); moist.	133.0	
10.1	0.167			-					
10.25	0.116			-					
7.8	1.80			-					
10.7	1.20			-					
3.2	1.20	MW28-SB031620-139		135	ML		SILT; 70% silt; 20% gravel; 10% fine sand; stiff; cohesive; reddish brown (5YR 4/4); moist.	140.0	
3.88	0.111			-					
5.30	0.250			-					
17.8	0.496	MW28-SB031620-139		140	SM		Silty SAND; 45% fine sand; 35% silt; 20% fine gravel; reddish brown (5YR 4/4); moist.	142.0	
2.36	7.76			-					
6.33	0.610	MW28-SB031720-149		-	ML		SILT; 60% silt; 30% fine to coarse subrounded to subangular gravel; 10% fine sand; slightly cohesive; weakly cemented in places; reddish brown (5YR 5/4); moist.	150.0	
9.26	1.90			-					
6.91	1.22			-					
23.1	1.22			-					
15.1	6.33	MW28-SB031720-149		150	ML		SILT; 50% silt; 35% fine sand; 15% fine gravel; cohesive; stiff; reddish brown (5YR 5/4); moist.	155	
35.2	2.54			-					
10.8	2.54			-					
7.4	0.101	MW28-SB031720-149		-	ML		SILT; 50% silt; 35% fine sand; 15% fine gravel; cohesive; stiff; reddish brown (5YR 5/4); moist.	155	
20.6	0.089			-					

← 6" soil vapor point at 118 ft bgs; #10/20 sand filter pack

← Hydrated bentonite pellet seal (120 to 186.5 ft bgs).

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20





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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-28

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 3/11/2020 - 3/18/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
23.2	0.100	MW28-SB031720-156	B		GW		Sandy GRAVEL; 55% fine to coarse subrounded to subangular well graded gravel; 35% fine sand; 10% silt; reddish brown (5YR 5/4) with gray mottling; moist.	156.0		
6.37	0.075				GM		Silty GRAVEL; 55% fine to coarse gravel; 40% silt; 5% fine sand; cohesive; reddish brown (5YR 5/4); moist.	159.0		
1.45	0.453	MW28-SB031720-165	B	160	ML		Gravelly SILT; 75% silt; 25% fine to coarse gravel; soft; reddish brown (5YR 5/4); wet.	160.0		
3.01	0.145				GM		Silty GRAVEL; 70% fine to coarse rounded gravel; 30% silt; slightly cohesive; medium dense; reddish brown (5YR 5/4); moist.	161.0		
2.51	0.107									
7.95	0.082	MW28-SB031720-165	B	165	ML		Sandy SILT; 55% silt; 25% fine sand; 20% fine gravel; weakly cemented in places; reddish brown (5YR 5/4); moist.	166.0		
4.98	0.082									
2.42	0.000	MW28-SB031720-171	B		ML		Gravelly SILT; 55% silt; 35% fine gravel; 10% fine sand; stiff; reddish brown (5YR 5/4); moist.	171.0		
2.90	0.000									
3.4	0.000									
11.0	0.731	MW28-SB031720-171	B	170	ML		Gravelly SILT; 55% silt; 35% fine gravel; 10% fine sand; stiff; reddish brown (5YR 5/4); moist.	171.0		
7.2	0.026									
10.8	0.058	MW28-SB031720-185	B	175	SM		Silty SAND; 60% fine to coarse sand; 30% silt; 10% fine gravel; loose; reddish brown (5YR 4/4); moist.	175.0		
9.3	0.003									
3.6	0.003									
7.5	0.010	MW28-SB031720-185	B	180	GM		Silty GRAVEL; 55% fine to coarse gravel; 35% silt; 10% fine sand; loose; reddish brown (5YR 5/4); moist.	178.0		
1.1	0.071									
2.8	0.190	MW28-SB031720-185	B	185	SW		Well Graded SAND; 60% fine to coarse sand; 30% fine gravel; 10% silt; loose; reddish brown (5YR 5/4); moist to wet.	184.0		
1.8	0.000									
3.2	0.000									
14	0.010	MW28-SB031720-185	B	186.5	ML		Sandy SILT; 60% silt; 30% fine sand; 10% fine gravel; cohesive; medium plasticity; stiff; reddish brown (5YR 5/3); moist.	186.5		
8.97	0.010									
8.4	0.000	MW28-SB031720-185	B	190	ML		Sandy SILT; 50% silt; 40% fine sand; 10% fine gravel; cohesive; medium plasticity; soft; reddish brown (5YR 5/3); moist.	190.0		
0.9	0.010									
0.7	0.018									
1.3	0.018			195				195.0		

Hydrated bentonite pellet seal (120 to 186.5 ft bgs).

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-28

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 3/11/2020 - 3/18/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
1.0	0.024	MW28-SB031720-199	B		SM		Silty SAND; 55% fine sand; 40% silt; 5% clay; medium dense; cohesive; reddish brown (5YR 5/4); wet.	198.0	<p>#10/20 sand filter pack (186.5 to 210 ft bgs).</p> <p>4-inch SCH 40 0.010-slot screen well (190 to 210 ft bgs).</p>
2.3	0.000								
2.9	0.030	MW28-SB031720-206	B	200	GW		Sandy GRAVEL; 50% well graded fine to coarse gravel; 35% fine sand; 15% silt; loose; reddish brown (5YR 5/4); wet.	203.0	
0.8									
1.1		MW28-SB031720-206	B	205	SM		Silty SAND; 50% fine sand; 45% silt; 5% fine gravel; cohesive; reddish brown (5YR 5/4); wet.	205.5	
3.8									
2.9		MW28-SB031720-206	B						
8.1									
4.6		MW28-GW031820-211	B		SW		Gravelly SAND; 55% medium to coarse sand; 35% fine to coarse gravel; 10% silt; loose; reddish brown (5YR 5/4); wet.	210.5	
10.2									
				210			End of boring at 210.5 ft bgs.		

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume  
 LOCATION Salt Lake City, UT  
 DRILLING METHOD Sonic  
 SAMPLING METHOD Sonic Grab  
 GROUND ELEVATION (FT MSL) 4679.35  
 TOP OF CASING (FT MSL) See Table 5  
 LOGGED BY Kimberly Myers  
 REMARKS Groundwater was encountered at approximately 115 feet bgs.

BORING/WELL NUMBER MW-29  
 DATE DRILLED 5/27/2020 - 6/4/2020  
 CASING TYPE/DIAMETER 1-inch SCH 80 PVC  
 SCREEN TYPE/SLOT 1-inch SCH 80 0.020-slot  
 GRAVEL PACK TYPE #10/20 sand  
 GROUT TYPE/QUANTITY Bentonite Grout  
 DEPTH TO WATER (FT BGS) \_\_\_\_\_  
 GROUND WATER ELEVATION (FT MSL) \_\_\_\_\_

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							Hydrovac from 0 to 8.5 ft bgs.		
				5					
							No recovery.	8.5	
9.5	0.211			10				10.0	
11.4	0.185				SW		Gravelly SAND with Silt: brown (7.5 YR 5/4); 60% sand, well graded, fine to coarse, subangular to subrounded; 25% gravel, poorly graded, fine to medium, subangular to subrounded; 15% silt, non-plastic, moist.	12.5	
15.3	0.217						Sandy SILT with Gravel: reddish brown (5 YR 5/4); 50% silt, non-plastic; 35% sand, poorly graded, fine; 15% gravel, well graded, fine to coarse; moist.	15.0	
10.5	0.249				ML			16.0	
21.6	0.294						CLAY with Gravel: reddish brown (2.5 YR 4/4); 80% clay, low plasticity; 15% gravel, well graded, fine to coarse, angular to subrounded, up to 6 inches; 5% sand, poorly graded, very fine to fine, moist.	18.0	
13.8	0.346						Sandy SILT with Gravel: reddish brown (2.5 YR 4/4); 65% silt, well graded; 20% sand; 15% gravel, fine to medium, angular.	19.0	
24.1	0.298				CL			20.0	
14	0.233						Gravelly SILT and CLAY: reddish brown (2.5 YR 4/4); gravel up to 4 inches, angular to subrounded.	21.2	
16.5	0.102				ML			21.5	
9.3	0.097				ML			22.5	
11.4	1.09				ML		Sandy SILT: 60% silt, non-plastic; 40% sand, well graded, fine to coarse.	22.5	
45.6	0.61				GC		Color is dusky red (2.5 YR 3/2); black discoloration; no odor (4-inch lens).	24.0	
	0.787				ML		Clayey GRAVEL: 3 inches of clayey gravel.		
							Sandy SILT with Gravel: gravel, is well graded, subangular to subrounded, up to 3 inches in diameter.		
63.9	0.286				GM		Silty GRAVEL with SAND: 45% gravel, angular to subrounded, up to 5 inches; 40% sand, well graded; 15% silt, non-plastic.		
75.3	1.1	MW29-SB052720-							

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



555 17th Street, Suite 500  
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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-29

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/27/2020 - 6/4/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
39.6	0.337	24			SM		Silty SAND: 60% sand, 40% silt. 4-inch layer of coarse gravel, angular to subrounded.	26.0	
30.4	0.296						Gravelly CLAY: 60% clay, 40% gravel.		
68.8	0.288				CL GP		5 inch layer of coarse gravel, angular to subrounded.	27.5 28.0	
62.3	0.321						Gravelly SILT with Sand: brown (7.5 YR 4/4); 55% silt, non-plastic; 25% gravel, well graded, subangular to subrounded, up to 4 inches; 20% sand, well graded, fine to coarse. White and powdery.		
30.5	0.171								
33.4	0.248			30	ML				
62.9	0.418							32.0	
80.4	1.04				CL		Gravelly CLAY: reddish brown (2.5 YR 4/4); 75% clay; 20% gravel, well graded, fine to medium, up to 2 inches; 5% sand, well graded.		
68.2	1.18							34.0	
41	0.199						Sandy SILT with Gravel: reddish brown (5 YR 5/4); 50% silt; 30% sand, well graded; 20% gravel, well graded, subangular to subrounded, up to 6 inches.		
75.9	0.169			35					
66.3	0.504								
61.9	0.472								
23.7	0.699				ML				
34.3	0.159						Color changes to reddish brown (2.5 YR 4/4).		
16.7	0.32			40			Same as above except silt increases to 65%.		
54.2	0.311								
92.5	0.668							42.5	
9.3	0.579				CL		CLAY with Sand: 95%clay, low plasticity; 5%sand; trace gravel; moist.		
14.5	0.783								
14.8	0.813			45					
11.5	0.855				CL		Silty CLAY: reddish brown (2.5 YR 4/4); 80% clay; 15% silt; 5% sand; moist.	46.0	
12.6	0.691								
1.9	0.82								
6.9	0.654				ML		Gravelly SILT with Sand: reddish brown (5 YR 4/4); 50% silt, non-plastic; 20% sand, well graded, fine to coarse; 30% gravel, well graded, angular to subrounded.	49.0 50.0	
9.6	0.106			50					
7.6	0.556				CL		CLAY with Sand: brown (7.5 YR 4/4); 80% clay, low plasticity; 10% sand, poorly graded, very fine to fine; 5% gravel, fine to coarse, subangular to subrounded, up to 2 inches; 5% silt.		
11.7	0.439							53.0	
10.3	0.552						Sandy CLAY: higher sand/gravel content, well graded, 50% of		

Hydrated bentonite pellets (11 to 117 ft bgs).

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-29

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/27/2020 - 6/4/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
14.5	0.283	MW29-SB052820-56	B	-	CL		total.	54.0		
17.3	0.463			55	CL		CLAY with Sand: brown (7.5 YR 4/4); 80% clay, low plasticity; 10% sand, poorly graded, very fine to fine; 5% gravel, fine to coarse, subangular to subrounded, up to 2 inches; 5% silt.	55.5		
24.8	0.239			-	SM		Silty SAND with Gravel: brown (7.5 YR 4/4); 50% sand, well graded, fine to coarse; 35% silt, non-plastic; 15% gravel, poorly graded, fine, subangular to subrounded; moist. Gravel becomes well graded, up to 3 inches in diameter.	57.5		
11	0.278			-	CL		Silty CLAY: 6 inches of silty clay.	58.0		
9.8	0.383			-	CL		CLAY: 70% clay, low to no plasticity; 25% silt; 5% sand very fine.	-		
10.6	0.464			-	CL		-	-		
11.6	0.328			-	CL		CLAY with Gravel: brown (7.5 YR 5/4); 75% clay, low plasticity; 15% gravel, subangular to subrounded; 5% sand; 5% silt; moist.	60.0		
13.6	0.611			-	CL		CLAY: brown (7.5 5/4); 90% clay, low plasticity; 5% sand; 5% silt; moist.	61.0		
22.7	0.333			-	CL		-	-		
12.1	0.925			-	CL		-	-		
16.9	1.02	MW29-SB052820-67	B	65	CL		Clayey SAND with Gravel: yellowish red (5 YR 4/6); 40% sand, well graded; 30% clay; 30% gravel, fine to medium, angular to subrounded.	65.0		
13.5	0.772			-	SC		6-inch layer of CLAY.	66.0		
26.9	0.369			-	SC		6-inch layer of CLAY.	67.0		
27.9	0.178			-	GP		Clayey SAND with Gravel: yellowish red (5 YR 4/6); 40% sand, well graded; 30% clay; 30% gravel, fine to medium, angular to subrounded.	67.5		
16.5	0.164			-	ML		GRAVEL: 70% coarse gravel lens.	67.5		
17.7	0.152			-	ML		Gravelly SILT with Sand: yellowish red (5 YR 4/6); 40% silt, non-plastic; 35% gravel, well graded, subangular to subrounded; 25% sand, well graded.	69.5		
7.8	0.123			-	ML		SILT: pinkish gray (5 YR 7/2); 3 inches of pinkish gray silt; calcite powder.	69.8		
10.3	0.279			-	ML		Gravelly SILT with Sand: brown (7.5 YR 4/4); 40% silt, non-plastic; 35% gravel, well graded, subangular to subrounded; 25% sand, well graded.	71.5		
21.7	0.189			MW29-SB052820-72	B	-	ML		SILT with Gravel: strong brown (7.5 YR 4/6); 75% silt, non-plastic; 10% sand; moist.	73.0
13.3	0.308					-	CL		CLAY: reddish brown (2.5 YR 4/4); 90% clay, low plasticity; 5% sand, poorly graded, fine; 5% silt; moist.	-
12.8	0.488	-	CL				-	-		
17.4	0.457	-	CL				-	-		
16.4	0.406	-	CL				-	-		
10	0.523	-	ML		SILT with Gravel: strong brown (7.5 YR 4/6); 75% silt, non-plastic; 15% gravel, poorly graded, fine, subangular to subrounded; 10% sand; moist.	77.5				
5.3	0.243	-	ML		SILT: 80% silt, non-plastic; 10% gravel, poorly graded, fine; 5% sand, fine, poorly graded; 5% clay, low plasticity.	79.0				
3.9	0.349	-	ML		SILT: 80% silt, non-plastic; 10% gravel, poorly graded, fine; 5% sand, fine, poorly graded; 5% clay, low plasticity.	80.0				
3.4	0.378	-	ML		CLAY: reddish brown (2.5 YR 4/4); 95% clay, medium to high plasticity; 5% sand, fine to coarse; trace gravel; moist.	80.0				
13.9	0.601	-	CH		-	-				

← Hydrated bentonite pellets (11 to 117 ft bgs).

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

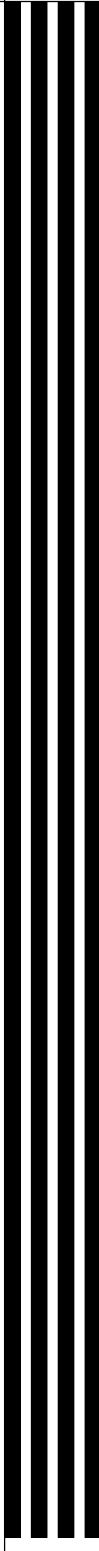
PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-29

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/27/2020 - 6/4/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
20.1	0.52	MW29-SB052820-82	B	-				83.5	 <p>Hydrated bentonite pellets (11 to 117 ft bgs).</p>
16.8	0.651					SC	Clayey SAND with Gravel: moist.	84.0	
19.2	0.713						Sandy CLAY: 85% clay, medium to high plasticity; 15% sand, very fine; moist.		
13	0.83					CH			
5.1	0.863							87.0	
5.5	0.705					CL	Sandy CLAY: 70% clay; 30% sand, well graded; moist.	87.5	
4.1	0.718					CH	Sandy CLAY: 85% clay, medium to high plasticity; 15% sand, very fine; trace gravel, up to 1.5 inches, subangular to subrounded; moist.	89.0	
5.4	0.479					ML	Gravelly SILT with Sand: 60 to 65% silt, low to non-plastic; 15 to 20% sand; 20% gravel, up to 2 inches; moist.	90.0	
6.8	0.22						CLAY with Sand: reddish brown (2.5 YR 4/4); 85 to 90% clay; 10 to 15% sand, mostly very fine to fine, trace coarse; trace gravel; moist.		
24.6	0.46					CL			
17.7	0.581				Color changes to reddish brown (2.5 YR 5/3).				
13.8	0.686					95.0			
10.7	0.712					95.5			
10	0.64				6 inch boulder.				
18.6	0.493				Silty SAND with Gravel: reddish brown (5 YR 5/4); 40% sand, well graded; 30% silt, non-plastic; 30% gravel, well graded, fine to coarse, up to 3 inches; dry to moist.				
29.4	0.225					99.0			
16	0.142								
23.7	0.108				ML	White to pinkish gray (5 YR 7/2) layer of powdery calcite silt.	100.0		
6.5	0.103					No recovery from 100 to 101 ft bgs.	101.0		
25.4	2.1					SAND with Silt and Gravel.			
20.2	0.763				SP SM		104.0		
8.3	0.19								
24.6	0.717	MW29-SB052820-104	B				Silty Clayey SAND and GRAVEL: reddish brown (2.5 YR 4/4); 70% sand and gravel; 30% silt with some clay. Gravel is up to 5 inches in diameter.		
13.2	0.117								
18.1	0.116								
14.2	0.154					SM			
5.2	0.105								
15.3	0.112						110.0		
23.7	0.105					No recovery from 110 to 115 ft bgs due to broken casing.			

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

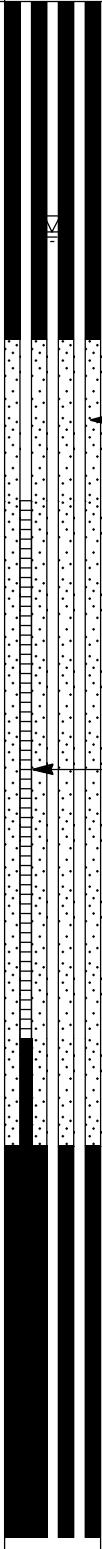
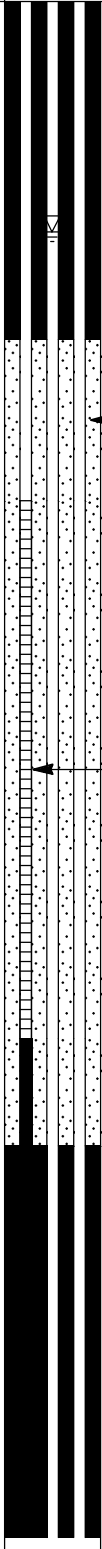
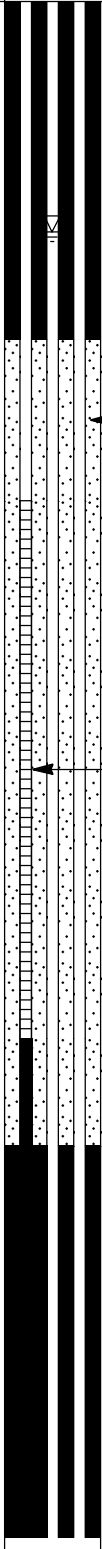
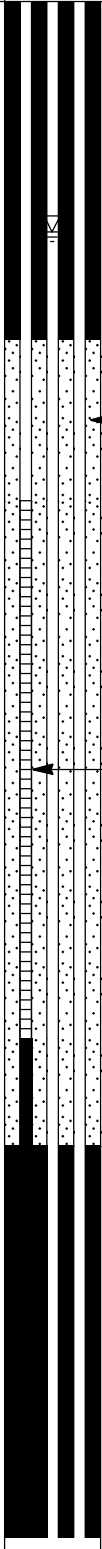
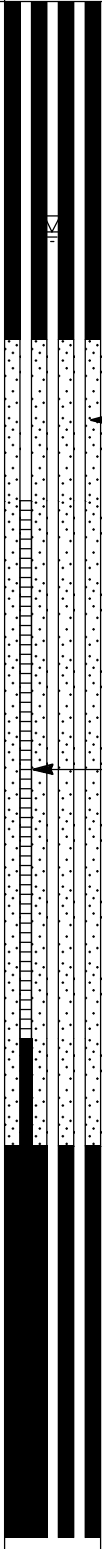
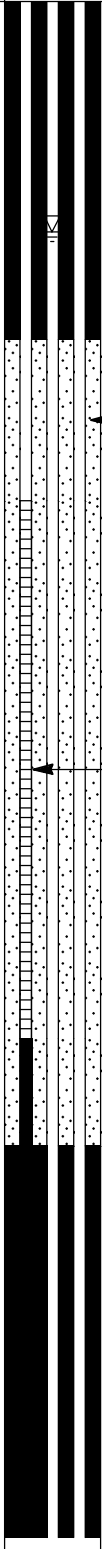
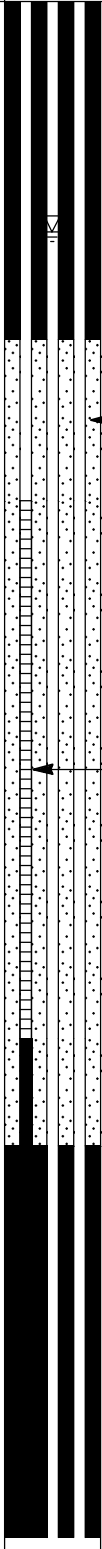
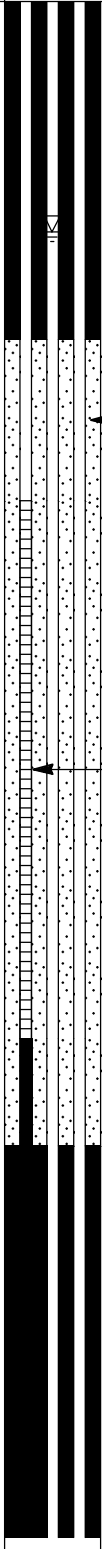
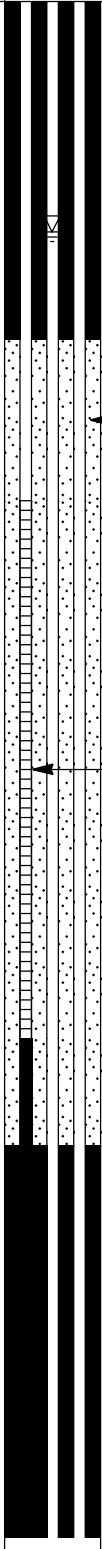
PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-29

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/27/2020 - 6/4/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM		
11.4		MW29-SB052920-115	B	115		GM	Silty GRAVEL with Sand: reddish brown (2.5 YR 4/4); 40% gravel, well graded, subangular to subrounded, up to 4 inches; 30% sand, well graded; 25% silt, non-plastic; 5% clay, some nodules; moist.	115.0			
11.6	0.308										117.0
2.8	0.259	MW29-GW052920-120	B			SC	Clayey SAND with Gravel: 70% sand, well graded; 20% clay, low plasticity; 10% gravel, poorly graded, fine; wet.				
4.2	0.147										
2.7	0.134										
0.5	0.17	MW29-SB052920-122	B	120		GM	Same as above except gravel content increases to 30% and becomes well graded and moist. Sand content decreases to 50%.	120.0			
6.9	0.198										122.0
43.4	0.219	MW29-SB052920-122	B			GM	Silty GRAVEL with Sand: brown (7.5 YR 5/3); 40% gravel, well graded, angular to subrounded; 30% sand, well graded, subangular to subrounded; 30% silt; moist.	122.0			
7.1	0.217										124.0
21.7	0.234	MW29-GW052920-125	B			CL	CLAY: 90% clay; 10% sand, poorly graded, coarse; moist to wet.				
4.6	0.392										
5.2	0.513										
2.2	0.684										
2.8	0.61										
2.9	0.415	MW29-GW052920-130	B			CL	CLAY with Gravel: reddish brown (2.5 YR 4/4); moist.				
4.2	0.333										
10.9	0.343										
9.6	0.385	MW29-GW052920-132	B			SM	Silty SAND with Gravel: reddish brown (5 YR 5/4); moist.				
12.6	0.457										
37.7	0.239	MW29-GW052920-135	B			SM	Silty SAND with Gravel: reddish brown (5 YR 5/4); moist.				
22.2	0.298										
5.4	0.465										
98.1	0.489	MW29-GW052920-135	B			GC	Clayey GRAVEL with Sand: reddish brown (2.5 YR 4/4); 40% gravel, well graded, fine to coarse, angular to subrounded, up to 3 inches; 35% sand, well graded; 25% clay, low plasticity; moist.				
47.5	0.236										

#10/20 sand filter pack (117 to 132 ft bgs).

1-inch SCH 80 0.020-slot screen ZIST nested well (120 to 130 ft bgs).

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20

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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-29

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/27/2020 - 6/4/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
28.1	0.32			140				140.0	<p>← Hydrated bentonite pellet seal (132 to 187 ft bgs).</p>
21.2	0.212				CL		CLAY with Gravel.	141.0	
1.2	0.277						Silty SAND with Gravel.		
10.3	0.324				SM			143.0	
17.1	0.121						CLAY with Sand: reddish brown (2.5 YR 4/4); 70% clay; 25% sand, poorly graded, very fine, subangular to subrounded; 5% gravel, fine, subrounded, up to 0.5 inch; moist.		
25.6	0.152	MW29-SB052920-144		145					
16.3	0.227								
3.5	0.257								
4.4	0.42						Color changes to brown (7.5 YR 5/4).		
2.6	0.554				CL				
1.4	0.558								
3.1	0.226			150			Color changes to brown (5 YR 5/4); slough.		
0.8	0.379								
1.1	0.361								
6	0.428								
5.4	0.402							154.0	
12	0.21	MW29-SB052920-155		155	SM		Silty SAND with Gravel: 60% sand, well graded, subangular to subrounded; 20% silt, non-plastic; 20% gravel, subangular to subrounded, up to 4 inches; moist.	156.0	
8.9	0.276								
11.2	0.237				CL		CLAY with Sand: reddish brown (5 YR 5/4); 70% clay; 25% sand, poorly graded, very fine, subangular to subrounded; 5% gravel, fine, subrounded, up to 0.5 inch; moist.		
9.1	0.345								
4.8	0.329							159.0	
4.9	0.239			160			Gravelly CLAY with Sand: light reddish brown (5 YR 6/4); 70% clay; 20% gravel, poorly graded, fine to medium, angular to subrounded; 10% sand, poorly graded, very fine, subangular to subrounded; moist.		
19	0.462								
21.2	0.359								
7.9	0.262				CL				
38	0.209						Gravel size increases to coarse, up to 4 inches.		
30.1	0.14			165					
33	0.266								
42.2	0.278	MW29-SB052920-					Transition from clay to silt.	167.0	
								167.5	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-29

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/27/2020 - 6/4/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
25.5	1.02	167		-	GC		Clayey GRAVEL with Silt: 40% gravel; 30% clay; 15% silt; 15% sand.	169.0	<p>Hydrated bentonite pellet seal (132 to 187 ft bgs).</p> <p>#10/20 sand filter pack (187 to 202 ft bgs).</p> <p>1-inch SCH 80 0.020-slot screen ZIST nested well (190 to 200 ft bgs).</p>
38.3	0.269			170	GM		Silty GRAVEL: pinkish gray (5 YR 7/2); 50% gravel, angular to subrounded; 25% silt; 25% sand, poorly graded, very fine to medium; dry.	170.0	
2.5	0.226						Clayey GRAVEL: reddish brown (2.5 YR 4/4); 40% gravel, well graded, up to 4 inches; 40% clay, low plasticity; 20% sand, well graded.		
31.8	0.396				GC				
46	0.243							173.0	
6.2	0.231						Gravelly Lean CLAY: 60% clay, low plasticity; 30% gravel; 10% sand.		
14.6	0.911				CL				
22.4	0.646			175				176.0	
26.4	0.64						4 inch long by 6 or 7 inch wide boulder.	176.3	
34.5	0.674						Gravelly CLAY with Sand: 55% clay; 25% gravel, well graded, subangular to subrounded, up to 3 inches; 20% sand, well graded.		
51.2	1.04	MW29-SB052920-178			CL				
37.6	0.36							180.0	
33.9	0.173			180			Low Recovery.		
5.7	0.153				CL		Gravelly CLAY: 70% clay; 20% gravel, fine to medium, subangular to subrounded; 10% sand.	182.0	
13	0.317							182.6	
4.2	0.202						8 inch boulder.	183.3	
2.2	0.192				CL		Gravelly CLAY: 70% clay; 20% gravel, fine to medium, subangular to subrounded; 10% sand.	184.5	
33.9	0.238			185	SC		Clayey SAND with Gravel: gravel is well graded, subangular to subrounded, 15 to 25%.	185.5	
45.6	0.108				CL		Gravelly CLAY: 70% clay; 20% gravel, fine to medium, subangular to subrounded, up to 3 inches; 10% sand.	186.7	
45.8	0.284	MW29-SB052920-187			MI		Silty GRAVEL with Sand: 45% silt; 30% gravel; 25% sand; dry to moist.	187.0	
3.7	0.515				CL		CLAY: 90% clay; 10% sand; moist. Water Encountered. Clay is low plasticity with silt mixed in. Trace coarse gravel, up to 5 inches in diameter.		
4.1	0.582							190.0	
2.3	0.58			190			CLAY: 90% clay; 10% sand, poorly graded, very fine; trace gravel, fine, subangular, trace coarse cobbles/boulders up to 5 inches; moist.		
4.2	0.201	MW29-GW053120-191			CL				
0.1	0.455							196.0	
1	0.411				CL				
1.1	0.343								
4	0.375			195					
5	0.306						CLAY with Gravel and Sand: reddish brown (2.5 YR 4/4);		

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-29

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/27/2020 - 6/4/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
7.2	0.367	MW29-SB053120-198	B	-	CL		75% clay; 15% sand, poorly graded, very fine; 10% gravel, well graded, subangular to subrounded, up to 4 inches. Increase in well graded gravel.	198.0		
11.2	0.305			-	CL		Gravelly CLAY with Sand: 40% clay; 35% gravel, well graded, angular to subrounded; 25% sand, well graded, fine to coarse; moist, dries quickly.	199.6		
62.8	0.176			-	CL		Sandy CLAY: 70% clay; 30% sand, well graded. Sand is poorly graded, very fine to fine; moist to wet.	201.0		
34.9	0.283			200	CL			201.3		
0	0.479				SW		3 inches of sandstone.	201.8		
					CL		Gravelly CLAY with Sand.	202.0		
0	0.542				CL		Sandy CLAY: trace fine gravel.			
0	0.436						CLAY with Sand: reddish brown (2.5 YR 4/4); 80% clay, low plasticity; 20% sand, poorly graded, very fine; trace coarse gravel.			
0	0.347					CL		From 204 to 204.5 ft bgs, 40% coarse gravel, subrounded, up to 6 inches.		
0	0.508			205						
0.2	0.542	MW29-SB053120-207	B	-			Clayey GRAVEL with Sand: 40% gravel, well graded, subangular to subrounded, up to 3 inches; 25% clay; 35% sand, well graded; moist.	207.0		
0.7	0.102				GC			210.0		
0.3	0.133							211.0		
0.4	0.116				CL		CLAY: brown (7.5 YR 5/4); 90% clay, low plasticity; 5% sand, fine; 5% silt; moist to dry.			
1.2	0.175	MW29-SB053120-217	B	210			Gravelly CLAY: gray (5 YR 6/1); 60% clay, medium plasticity; 30% gravel, subangular to subrounded, up to 3 inches; 10% sand, poorly graded, fine; moist to dry.			
0	0.671									
0	0.577									
0	0.24									
0	0.172									
0	0.39			215						
0	0.624				CL					
0	0.37									
0	0.311							Color changes to brown (7.5 YR 5/3).		
0	0.022									
0	0.178	220								
0	0.162					Gravelly CLAY: light brown (7.5 YR 6/3); 60% clay, medium plasticity; 30% gravel, mostly well graded, subrounded, up to 5 inches in diameter; very large boulders; 10% sand, fine.	220.0			
0	0.234									
0	0.21									
0	0.182									
				225						

← Hydrated bentonite pellet seal (202 to 227 ft bgs).

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWN01.GDT 12/17/20

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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-29

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/27/2020 - 6/4/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0	0.149	MW29-SB053120-227	B		CL		Color changes to light brown (7.5 YR 6/4); gravel increases to 40% and is medium to large grained.		
0	0.254								
0	0.241								
0	0.389								
0	0.266								
0	0.186								
0	0.45	MW29-GW060120-230	B	230	CL		CLAY with Gravel: brown (7.5 YR 5/4); 75% clay; 15% gravel, well graded, up to 3 inches in diameter; 10% sand, fine; moist.	230.0	
0	0.442								
0	0.465								
0	0.446								
0	0.165								
0	0.307								
0	0.206	MW29-SB060120-240	B	235	SM		Silty SAND with Gravel: 50% sand, well graded, subangular to subrounded; 30% gravel, up to 3 inches in diameter; 20% silt; wet.	235.0	
0	0.101								
0	0.879								
0	0.206								
0.02	0.391								
13.4	0.337								
5.7	0.448	MW29-SB060120-250	B				CLAY: reddish brown (5 YR 4/4); 95% clay, medium to high plasticity; 5% sand, very fine; trace gravel, well graded.		
9.8	0.502								
0.2	0.217								
6.5	0.317								
6.3	0.457								
11.3	0.188								
16.2	0.207	MW29-SB060120-250	B	245	CH		CLAY with Gravel: reddish brown (2.5 YR 4/4); 85% clay; 15% gravel, subangulr to subrounded, up to 2 inches.	250.0	
1.8	0.21								
17.9	0.541								
1.5	0.168								
10.4	0.216								
38.9	0.202								
					CL		CLAY with Gravel: light brown (7.5 YR 6/4); gravel is fine to medium, subangular to subrounded, up to 2 inches.	251.0	
					CL				

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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-29

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/27/2020 - 6/4/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
51	0.203	MW29-SB060120-256	B	-				255.0		
	0.347			255			CLAY with Sand and Gravel: light brown (7.5 YR 6/4); 55% clay; 25% sand; 20% gravel; wet - saturated.			
123.4	0.215					CL				
	0.271									
18.1	0.193							259.0		
9.6							Low Recovery.			
6.8	0.215	MW29-GW060220-260	B	260			CLAY with Sand and Gravel: brown (7.5 YR 5/3); 55% clay, low to medium plasticity; 25% sand, well graded; 20% gravel, well graded, fine to medium, trace coarse; moist to wet.	260.0		
20						CL				
8.2	308									
18.4	0.257					CL		CLAY: 95% clay, very stiff; 5% fine sand and gravel; moist.		263.0
6.9	0.187						CLAY with Sand and Gravel: brown (7.5 YR 5/3); 55% clay, low to medium plasticity; 25% sand, well graded; 20% gravel, well graded, fine to medium, trace coarse; moist.	263.5		
1.6				265						
4.7	0.165							265.5		
33.1	0.262						CLAY with Gravel: 70% clay, very stiff; 10% sand, well graded, fine to coarse; 20% gravel, well graded, up to 2 inches; moist.	266.5		
32.4	0.204	MW29-SB060220-267	B				Silty GRAVEL: pink (7.5 YR 7/3); 50% gravel, angular to subrounded; 35% silt, non-plastic; 15% sand, poorly graded, very fine to fine, dry.	267.5		
2.5	0.48					CL		Sandy CLAY: 65% clay, low plasticity; 30% sand, poorly graded, very fine to fine, subangular to subrounded; 5% gravel, fine, subangular.		
4.1	0.359								269.5	
8.1	0.302			270			Gravelly CLAY with Sand: 60% clay; 15% sand; 25% gravel.	270.0		
							GRAVEL: cemented gravel; hard.	271.0		
							No Recovery.			
24.3	0.186	MW29-SB060320-273	B				Silty SAND with Gravel: pale brown (10 YR 6/3).	273.0		
2	0.122					SM				
8	0.112					275			275.5	
							No Recovery. Casing became stuck in formation and sample was lost while vibing it out. It is possible that sample came from 273 to 275.5 ft bgs.			
1.6	0.321			280			CLAY with Sand and Gravel: reddish brown (2.5 YR 4/3); 85% clay, low plasticity, stiff; 15% sand, poorly graded, very fine to fine, subangular to subrounded; trace gravel, fine.	280.0		
3.2	0.461									

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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-29

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/27/2020 - 6/4/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
3.2		MW29-SB060320-282							
1.1	0.509								
1.5	0.554								
	0.556			B	285				
1.8	0.462						Clay is firm.		
2.4	0.479								
3	0.365								
2.5	0.324			290	CL		Clay is very stiff.		
1.9	0.267								
2.5	0.343	MW29-SB060320-292							
3.2	0.321								
2.6	0.295							Clay is stiff.	
1.6	0.285			B	295				
2	0.197								
1.4	0.254								
2.2	0.278								
2.6	0.867								
				300				300.0	
1.1	0.574				CL		CLAY: 90% clay, medium plasticity; 10% sand, very fine; stiff; moist.	301.0	
4.1	0.361				GW		3-inch GRAVEL layer.	301.3	
					CL		CLAY: 90% clay, medium plasticity; 10% sand, very fine; stiff; moist.	302.0	
3.7	0.584	MW29-SB060320-302					CLAY: 90% clay, medium plasticity; 10% sand, very fine; trace gravel, fine, 0.25 inch diameter.		
3.5									
2.5	0.312								
				B	305				305.0
1.5	0.301						CLAY: 85% clay; 10% sand, very fine; 5% gravel, subrounded, up to 0.5 inch.		
1.3	0.31				CL				
2.7	0.353						CLAY: 90% clay, medium plasticity; 5% sand, very fine; 5% silt.	307.5	
2.8	0.296								
7.8	0.191				CL				
10.2	0.294			310			CLAY with Sand and Gravel: reddish brown (2.5 YR 4/4);	310.0	

Hydrated bentonite pellet backfill (242 to 340 ft bgs).

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-29

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/27/2020 - 6/4/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
5.1	0.192	MW29-SB060320-314	B	-	CL		80% clay; 10% sand, poorly graded, very fine; 10% gravel, well graded, fine, subangular to subrounded, up to 0.75 inch.			
10.6	0.183			-						
16.2	0.501			-						313.5
22.8	0.604			-				GRAVEL and SAND: cemented gravel and sand.		314.0
10.4	0.453			315-		ML		Gravelly SILT: 65% silt, non-plastic; 30% gravel, well graded, subangular to subrounded, up to 1 inch; 5% sand, poorly graded, very fine. Clay is present.		316.0
	0.134					ML		4-inch layer of powdery silt.		316.3
14.2	0.483					ML		Clayey SILT: 40% silt (40%); 35% clay; 20% gravel; 5% sand.		
28.8	0.243					CL		CLAY with Gravel.		318.0
5.7	0.24					ML		Gravelly SILT: 65% silt, non-plastic; 30% gravel, well graded, subangular to subrounded, up to 1 inch; 5% sand, poorly graded, very fine.		319.0
25.5	0.221			320-		ML		Clayey SAND with Gravel: 40% sand, well graded; 40% clay; 20% gravel, well graded, up to 2 inches; dense; moist to wet.		320.0
2.2	0.219	MW29-SB060320-328	B	-					← Hydrated bentonite pellet backfill (242 to 340 ft bgs).	
1.2	0.313			-						
6.6	0.353			-						
5.7	0.2			-						
5.6	0.174			325-		SC				
16	0.192			-						
8.6	0.149			-						
23.7	0.141			-				Same as above except sand increases to 40%; clay decreases to 30%, low plasticity; and gravel increases to 30%; dry to moist.		329.0
14.3	0.386					CL		Gravelly Clay: brown (7.5 YR 5/3).		
7.7	0.231			330-		GC		Clayey GRAVEL.		330.5
14.7	0.243			CL		Gravelly CLAY: 70% clay; 20% gravel, well graded, fine to coarse, up to 1 inch; 10% sand, well graded.	331.0			
6.7	0.126			CL			332.5			
16.3	0.801			GC		Clayey GRAVEL with Sand: 40% gravel, well graded; 30% sand, well graded; 30% clay; moist.				
12.2	0.21			GC		Coarse gravel up to 3 inches in diameter from 334.5 to 335 ft bgs.				
14.5	0.925			GC			337.0			
17.5	0.66	MW29-SB060420-337	B	-						
11.9	0.571			-		CL		Gravelly CLAY: brown (7.5 YR 5/3); 70% clay; 20% gravel, up to 3 inches; 10% sand, well graded.		
13	0.359			CL						

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## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-29

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/27/2020 - 6/4/2020

*Continued from Previous Page*

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
11.6			□			▨	Becomes hard; cemented; may have some silt and clay. End of boring at 330 ft bgs.	340.0	



## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER	238824.6495-F3048-005.DRILL	BORING/WELL NUMBER	MW-30
PROJECT NAME	700 S 1600 E PCE Plume	DATE DRILLED	5/22/2020 - 6/8/2020
LOCATION	Salt Lake City, UT	CASING TYPE/DIAMETER	1-inch SCH 80 PVC
DRILLING METHOD	Sonic	SCREEN TYPE/SLOT	1-inch SCH 80 0.020-slot
SAMPLING METHOD	Sonic Grab	GRAVEL PACK TYPE	#10/20 sand
GROUND ELEVATION (FT MSL)	4723.07	GROUT TYPE/QUANTITY	Bentonite Grout
TOP OF CASING (FT MSL)	See Table 5	DEPTH TO WATER (FT BGS)	
LOGGED BY	Joe Miller, Frank Morris	GROUND WATER ELEVATION (FT MSL)	
REMARKS	Groundwater was encountered at approximately 240 feet bgs.		

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							No recovery. Hydrovac clearing from 0-10' bgs.		
8.2	0.185	MW30-SB052220-15	B	10	GP		GRAVEL with Silt and Sand: dark brown (7.5 YR 3/4); 70% fine gravel with a few cobbles/coarse gravel; 15% sand; 15% silt; moist.	10.0	
8.2	0.185				GM				
11.9	0.331	MW30-SB052220-15	B		GW		GRAVEL: 90% well graded gravel and cobbles, subangular; 10% sand; loose; dry.	14.0	
12.4	0.078			15	GM			Silty GRAVEL with Sand: brown (7.5 YR 5/4); 65% gravel, well graded, rounded; 15% silt; 15% sand; 5% clay; loose; moist; some FeO staining. 3 to 4 inch cobbles around 18 ft bgs. Cohesive, angular, large cobbles around 20 ft bgs.	
4.8	0.14	MW30-SB052220-15	B		GW		GRAVEL with Sand: 60% fine to coarse gravel, 6 to 8 inch cobbles; 40% sand; loose; dry.	20.0	
7.1	0.157			20	GM			Silty GRAVEL 70% gravel, subangular to subrounded, 6 to 8 inch cobbles; 30% silt; cohesive in places; moist.	
18.4	6.78	MW30-SB052220-15	B		GW		GRAVEL with Sand and Silt: brown (7.5 YR 4/4); 70% fine to coarse gravel; 30% sand; 10% silt; loose; weakly cemented in places; moist.	27.5	
41.3	0.445			25	GM			CLAY with Gravel: reddish brown (5 YR 4/3); 80% clay; 20% fine gravel; cohesive; stiff; moist.	
10.1	0.206	MW30-SB052220-29	B		GW		SAND with Gravel: 70% fine to coarse sand; 30% fine gravel; moist.	32.0	
26				30	GM				
27		MW30-SB052220-29	B		CL		CLAY with Gravel: reddish brown (5 YR 4/3); 80% clay; 20% fine gravel; cohesive; stiff; moist.	32.0	
20.6	0.385			30	SW				
100.5	0.152				SW				
1.5									
2									
2.1									
0.7									

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## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/22/2020 - 6/8/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.4	0.174	MW30-SB052220-48		-	ML		SILT: light gray (10 YR 7/2); 50% silt; 40% clay; 10% sand; firm to stiff; cohesive; moist to wet.	39.0	
0.6	0.161			-	ML				
1.9	0.085			40	SM		Silty SAND with Gravel: brown (7.5 YR 5/4); 50% sand; 25% silt; 25% gravel; loose; moist. Becomes cohesive near 40.8 ft bgs.		
5.1	0.159	MW30-SB052220-53		6.2	SM			43.0	
6.2	0.105			-	SM				
4	0.115			45	SW		SAND with Gravel: reddish brown (5 YR 4/4); 80% fine to coarse sand, 20% fine to coarse gravel; loose; moist.		
1.6	0.172	MW30-SB052220-53		6.1	GM			45.0	
11.3	0.135			-	GM		Silty GRAVEL: reddish brown (5 YR 4/4); 70% gravel, angular to subrounded, 30% silt; dense; moist. Becomes cohesive and has less gravel around 48 ft bgs.		
15.9	0.137			50	GM		Silty GRAVEL: light brown (7.5 YR 6/3); 85% gravel; 15% silt; cemented; dense; dry to moist.		
12.8	0.151	MW30-SB052220-53		33.2	GM			50.0	
68.5	0.157			55	GW GM		GRAVEL with Sand and Silt: 60% fine to coarse gravel; 30% fine sand; 10% silt; loose; dry to moist. Becomes moist and increase in silt around 57.5 ft bgs. Becomes weakly cemented around 59 ft bgs.		
18.5	0.157			-	GW GM				
17.8	0.251	MW30-SB052220-53		12.5	GM			60.0	
27	0.12			60	SM		SAND with Gravel and Silt: reddish brown (5 YR 4/4); 50% sand, subangular to subrounded; 40% gravel; 10% silt; loose; moist. Few large cobbles near 65 ft bgs. 8 inch cobbles near 66 ft bgs.		
37	0.202			-	SM				
17.5	0.084	MW30-SB052220-53		6.7	SM			66.0	
42.2	0.084			65	SM				
22.9	0.125			-	GM		Silty GRAVEL: reddish brown (5 YR 4/4); 60% fine to coarse gravel, angular; 40% silt; cohesive in places; moist. Cohesive near 70 ft bgs.		
14.2	0.169	MW30-SB052220-53		12.5	GM			75.0	
9.6	0.242			70	GM				
24.1	0.14			-	GM				
20.2	0.14	MW30-		55					

Hydrated bentonite pellets (33 to 237 ft bgs).

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/22/2020 - 6/8/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
32.3	0.161	SB052220-74		-	GW GM		GRAVEL with Sand and Silt: dark reddish brown (5 YR 3/4); 60% fine to coarse gravel; 30% fine to medium sand; 10% silt; loose; moist. Silty lense at 86 ft bgs. Large cobbles (4 to 6 inches) at 89.5 ft bgs.		
20	-								
14.7	0.042			-					
15.4	-			-					
15.1	0.154	MW30-SB052220-95		80	GW GM		GRAVEL with Sand: brown (7.5 YR 5/4); 65% fine to coarse gravel; 35% sand, angular to subrounded; loose; moist; weakly cemented in places. 4 inch cobble at 92.7 ft bgs.	90.0	
17.8	-								
45	0.138			-					
17.7	-			-					
16.1	0.19	MW30-SB052220-95		85	GM		Silty GRAVEL: brown (7.5 YR 5/4); 60% fine to coarse gravel; 40% silt; cohesive; moist.	95.0	
17.1	-								
13.5	0.126			-					
20.2	-			-					
77.6	0.186	MW30-SB052220-102		90	GW		GRAVEL: fine to coarse, very dense, cemented. Less cemented near 98 ft bgs.	96.0	
52.4	-								
67.8	0.317			-					
48.2	-			-					
83.4	0.509	MW30-SB060220-111		95	GW		GRAVEL with Sand: pale brown (10 YR 6/3); 70% fine to coarse gravel, sunangular to subrounded, 6 to 8 inch cobbles; 30% sand; dense; dry. Cemented in places near 100 ft bgs. Cemented near 104 ft bgs.	98.0	
28.4	0.828			-					
113.2	0.35			-					
154.4	-			-					
131.9	0.403	MW30-SB060220-111		100	GM		Silty GRAVEL: 70% fine to coarse gravel, angular to subangular; 30% silt; moist. Cohesive near 106.5 ft bgs. Weakly cemented near 108.5 ft bgs.	105.0	
32	-								
16.3	0.165			-					
31.1	0.216			-					
161	0.288	MW30-SB060220-111		105	GW GM		GRAVEL with Sand and Silt: reddish brown (5 YR 5/3 to 4/3); medium to coarse gravel; dry to moist.	110.0	
90.3	-								
58.3	0.703			-					
-	-			-					
-	-	-	-	115	-	-	-	115.0	-

Hydrated bentonite pellets (33 to 237 ft bgs).

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/22/2020 - 6/8/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM							
36.2	0.299	MW30-SB060220-135	B	-	GW		GRAVEL with Sand and Silt: reddish brown (5 YR 5/3 to 4/3); medium to coarse gravel; dry to moist.	118.0								
138.2	0.367			-	GM		Silty GRAVEL with Sand: brown (5 YR 5/3); subangular clasts, up to 4 inch cobbles; trace clay; dry.									
116.7	0.23			120	GM					Silty GRAVEL with Sand: brown (5 YR 5/3); subangular clasts, up to 4 inch cobbles; trace clay; dry.						
58.9				-	GM											
63.1	0.295			-	-		CL				Clay Matrix.	122.5				
8.6											85.2	123.5				
64.7	0.121			MW30-SB060220-151	B		-			GM		Silty GRAVEL with Sand: brown (5 YR 5/3); subangular clasts, up to 4 inch cobbles; trace clay; dry.	125.0			
66.3	0.369						125			GM					SAND and GRAVEL: pinkish gray (5 YR 7/2); subangular to subrounded cobbles; some silt; dry. Brown (5 YR 4/3) from 125.5 to 126.5 ft bgs. Clay increases at 127.5 ft bgs.	
18.1	0.162						-			SW						-
168.2												144.4			130	
43.2	0.312	MW30-SB060220-151	B			-	GM		Silty GRAVEL: pinkish gray (5 YR 7/2); dry. Clay presented from 136 to 138 ft bgs.	141.0		← Hydrated bentonite pellets (33 to 237 ft bgs).				
51.2	0.608					135	GM								Clayey GRAVEL with Silt: light red (2.5 YR 6/6); minor iron staining.	
62.4	0.143					-	GC									-
32.5									80.3						140	
32	0.151					-	-		-						-	-
38.2																
42.5	0.339			MW30-SB060220-151	B	-	GM				Silty GRAVEL with Sand: reddish brown (5 YR 5/3); dry; sand-rich zone from 153-154 ft bgs.					
41	0.19					150	GM							Silty GRAVEL with Sand: reddish brown (5 YR 5/3); dry; sand-rich zone from 153-154 ft bgs.		
26.2	0.135					-	-								-	-
28.2											25.4			155		
15	0.164	-	-			-	-									
14.6	0.104							-		-	-	-				
15.6		12.7	1.21			155	GM								Silty GRAVEL with Sand: reddish brown (5 YR 5/3); dry; sand-rich zone from 153-154 ft bgs.	
3.7	0.601	-	-			-	-									
2.5								10.3		155	GM			Silty GRAVEL with Sand: reddish brown (5 YR 5/3); dry; sand-rich zone from 153-154 ft bgs.		

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20

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## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/22/2020 - 6/8/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
7.2	0.13	MW30-SB060220-169			SW		SAND with Gravel: fine to medium, very loose.	156.0		
3.2	0.178						SAND and GRAVEL with Silt: light reddish brown (5 YR 6/4); very loose; dry.	157.0		
2.4										
1.6	0.166									
1.9										
13.3						160		Oxidized zone from 160 to 161 ft bgs.		
28.8										
10	0.157						SW SM	Slight color change at 162 ft bgs to pinkish gray (7.5 YR 6/2).		
9.9	0.177									
13.7						165				
13.9										
67.1	0.215					Color change at 166.5 ft bgs to gray (7.5 YR 6/1); 3 inch layer.				
44.6	0.452									
58.4	4.22			170	CL		Gravelly CLAY with Silt: dark reddish brown (2.5 YR 3/4); non-plastic, trace of limonite, possible magnetite, black grains; dry to moist.	169.0		
13.2	0.216	MW30-SB060220-178					Silty GRAVEL with Sand: pinkish gray (5 YR 6/2); large, subangular, 5 inch clasts, similar gray (7.5 YR 6/1) zone intermittent, increase in clay content 178.5 to 179 ft bgs.	171.5		
18.4										
32.4	0.084									
26.5						175				
27.3	0.369									
12.7	0.49									
29.2						180	GM			
9										
10										
18.2										
19.6	0.148									
18.4										
30.2	0.234			185						
15.2										
25.8	0.3									
20.7										
13.8	0.187			190		GRAVEL with Sand and Silt: light gray (7.5 YR 7/1); fine to coarse sand; very loose.	189.0			
30.4					GW GM	Light gray (7.5 YR 7/1) from 191 to 191.6 ft bgs; dry; 8 inch layer.				
12.7	0.359					Color change to brown (7.5 YR 4/4) at 191.6 ft bgs. Slightly more fines.	193.0			
3.7										
6.3	0.166			195	GW	GRAVEL with Sand: medium to coarse sand; 3 inch cobbles; trace silt; very loose; dry.	195.0			

Hydrated bentonite pellets (33 to 237 ft bgs).

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20



## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/22/2020 - 6/8/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
3.9		MW30-GW060420-237					GRAVEL with Sand and Clay.		<p>#10/20 sand filter pack (237 to 253 ft bgs).</p> <p>1-inch SCH 80 0.020-slot screen ZIST nested well (240 to 250 ft bgs).</p>	
2.4	0.669				GW		Clay-rich zone at 237 ft bgs; wet. Saturated below 237 ft bgs.			
0.3	0.51		SB060320-237			GC				
1.2				U	240					
0.5	0.159							241.0		
0.9						CL		Gravelly CLAY: large rock clast in clay matrix; dry to moist.		243.0
1.3	0.225									
4.2						GC		Clayey GRAVEL with Sand: moist.		
3.1	0.141				245	GW		GRAVEL with Sand and Silt: saturated.		245.0
1.8						GM		Gravelly CLAY: medium stiff; moist.		246.0
0.9	0.27				CL		Sandy CLAY with Gravel: brown (7.5 YR 5/4); slightly plastic; medium stiff; moist to wet.	247.0		
3.8										
5.1	0.255			250	SM		Silty SAND with Gravel: medium to coarse sand; well rounded gravel; saturated at 250 ft bgs.	249.5		
6.8										
2.1	0.2				GW		Grading to gravel with sand.	251.0		
2.2			U				Gravelly CLAY with Silt: reddish brown to weak red (2.5 YR 5/4 to 5/2); slightly stiff to stiff; dry to moist.	252.0		
1.9	0.195									
2.5										
2.4	0.308			255	CL					
1.7										
2.3	0.151									
3.1	0.138									
1.2					GP		Coarse gravel zone with heavy clay matrix; dry to moist.	259.0		
2.6										
2.6	0.037				CL		Gravelly CLAY with Silt: reddish brown to weak red (2.5 YR 5/4 to 5/2); slightly stiff to stiff; dry to moist.	260.0		
3.6	0.057						Gravelly CLAY with Silt: reddish brown to red (2.5 YR 5/4 to 5/6); slightly plastic; dry to moist.	262.0		
3.5										
9	0.638		U	265			Coarser gravel with heavy clay matrix at 265 ft bgs; dry to moist.			
18.6		MW30-SB060420-266							<p>Hydrated bentonite pellet seal (253 to 280 ft bgs).</p>	
18.7	0.043				CL					
0.7										
3	0.047				270					
12.5	0.195		U							
15.5										
19.6	0.226						Clayey GRAVEL: fairly loose; dry to moist. Grades to coarse	274.0		
				275						

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/22/2020 - 6/8/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
49.2					GC		sand and gravel below.	276.0	<p>#10/20 sand filter pack (280 to 294 ft bgs).</p> <p>1-inch SCH 80 0.020-slot screen ZIST nested well (282 to 292 ft bgs).</p> <p>Hydrated bentonite pellet seal (294 to 314 ft bgs).</p>	
46.5	0.286	MW30-GW060520-280	B		SW		SAND and GRAVEL: pink (5 YR 7/3); coarse sand and gravel; dry to moist.	277.0		
58.6				CL		CLAY with Gravel: dry.	278.0			
49	0.426			GC		Clayey GRAVEL; dry to moist.	279.0			
5.1						GW		GRAVEL with Sand and Silt: reddish brown (2.5 YR 4/4); dry to slightly moist; more silt from 280 to 281 ft bgs.		281.0
30.4	0.211	MW30-SB060520-286	B	280	GM		Gravelly CLAY with Silt: reddish brown (2.5 YR 4/3); non-plastic; stiff; dry to moist.	283.5		
27.3	0.036			CL						
24.2						GW		GRAVEL with Sand, Clay and Silt: reddish brown (2.5 YR 5/3); 3 to 4 inch clasts; moist to wet.		287.0
28.8		MW30-GW060520-298	B	285	GC		SAND and GRAVEL: pale red (2.5 YR 7/2); mostly gravel; medium to coarse sand; some silt; dry.	288.5		
23.1	0.061			SW		SAND with GRAVEL: coarse sand; some silt; very loose; saturated.	290.0			
27.4	0.038			SP		Top 1.5 ft bgs of core missing.	291.5			
16.6	0.315	MW30-GW060520-306	B		CL		Gravelly CLAY with Silt: reddish brown (2.5 YR 4/3); stiff; dry to moist.	293.0		
20.8	0.009					GW		GRAVEL with Sand and Silt: pale red (2.5 YR 7/2); dry to moist. Hard drilling. Large boulder of sandstone or quartzite cored 294 to 295.2 ft bgs.		295.0
20.3						GM		Becomes moist to wet from 297 to 298 ft bgs.		300.0
16.4	0.131							Angular clasts of broken shale; rounded to subrounded clasts of metamorphic rock and quartz; dry; reddish brown (2.5 YR 4/3).		301.0
28.6	0.114	MW30-SB060520-310	B	300			Missing to 1'- hard drilling.	303.0		
21.8	0.118					GC		Clayey GRAVEL: reddish brown (5 YR 5/3); mottling; moist to wet. Iron staining at 301.5 ft bgs.		306.0
33.3	0.032					ML		Sandy SILT; matrix predominant. Slightly moist from 304 to 308 ft bgs.		306.3
78.7	0.003					CL		CLAY Lens.		308.5
62.4	0.035	MW30-GW060520-315	B	305	GC		Clayey GRAVEL.	310.0		
51.6	0.089					GW		GRAVEL with Sand and Silt: pinkish gray (5 YR 6/2); coarse; very loose.		313.0
5	0.003					GM		Missing Core; washed out.		315.0
29.1	0.003									
21.6	0.035									
26.1	0.089									
23	0.003									
15.4	0.003									
30.6	0.012									
31.5										
51.1										
53										
294.2										

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 5/22/2020 - 6/8/2020












Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
219.3		MW30-SB060720-316.5	B					316.5	<p>#10/20 sand filter pack (314 to 330 ft bgs).</p> <p>1-inch SCH 80 0.020-slot screen ZIST nested well (317 to 327 ft bgs).</p>	
420.1										
448.5	0.024						GM	Silty GRAVEL: 15% clay; very loose; saturated.		
3.8	0.05	MW30-GW060720-320	B	320			Missing; too wet for description.	320.0	<p>1-inch SCH 80 0.020-slot screen ZIST nested well (317 to 327 ft bgs).</p>	
17.2										321.0
89.4							CL	Gravelly CLAY and Sand with Gravel: alternating 1 foot beds.		
221.7		MW30-SB060720-336	B					325.0	<p>1-inch SCH 80 0.020-slot screen ZIST nested well (317 to 327 ft bgs).</p>	
715.2										325.0
617							SP SM	SAND with Gravel and Silt: fine to medium sand. Color change to alternating reddish brown and pinkish gray ( 5 YR 4/3 and 7/2) from 325.5 to 326.5 ft bgs. Moist to wet at 326.5 ft bgs.		327.5
479		MW30-GW060720-340	B	325			Silty GRAVEL: broken shale clasts.	327.5	<p>1-inch SCH 80 0.020-slot screen ZIST nested well (317 to 327 ft bgs).</p>	
90.6										330.0
14.1							GM	Light red (2.5 YR 6/8); oxidized iron staining from 329 to 330 ft bgs.		330.0
55.5		MW30-SB060720-336	B				Gravelly CLAY with Silt : reddish brown (2.5 YR 5/3); low plasticity; stiff; moist to dry.	330.0	<p>1-inch SCH 80 0.020-slot screen ZIST nested well (317 to 327 ft bgs).</p>	
112.3										330.0
11.8							CL	Gravelly CLAY with Silt : reddish brown (2.5 YR 5/3); low plasticity; stiff; moist to dry.		
4.6		MW30-GW060720-340	B					335.5	<p>1-inch SCH 80 0.020-slot screen ZIST nested well (317 to 327 ft bgs).</p>	
12.3										335.5
13.7							GM	Silty GRAVEL with Clay: moist to wet.		
5.7		MW30-SB060720-336	B	335			Gravelly CLAY with Silt: iron stained clasts; stiff to very stiff; dry.	337.5	<p>1-inch SCH 80 0.020-slot screen ZIST nested well (317 to 327 ft bgs).</p>	
5.5										337.5
2.2							CL	Gravelly CLAY with Silt: iron stained clasts; stiff to very stiff; dry.		339.0
5		MW30-GW060720-340	B				Silty GRAVEL with Clay.	340.0	<p>1-inch SCH 80 0.020-slot screen ZIST nested well (317 to 327 ft bgs).</p>	
6.3										340.0
6.3							GM	Silty GRAVEL with Clay.		340.0
2.8		MW30-SB060720-336	B	340			Gravelly CLAY: reddish brown (2.5 YR 5/3); moist.	341.5	<p>1-inch SCH 80 0.020-slot screen ZIST nested well (317 to 327 ft bgs).</p>	
36.3										341.5
18.1							CL	Gravelly CLAY: reddish brown (2.5 YR 5/3); moist.		341.5
18.1		MW30-GW060720-340	B				Silty GRAVEL: some sand; dry to moist.	342.5	<p>1-inch SCH 80 0.020-slot screen ZIST nested well (317 to 327 ft bgs).</p>	
23.2										342.5
4.4							GM	Silty GRAVEL: some sand; dry to moist.		342.5
1.1		MW30-SB060720-336	B				Gravelly CLAY with Silt: moist.	345.0	<p>1-inch SCH 80 0.020-slot screen ZIST nested well (317 to 327 ft bgs).</p>	
2.3										345.0
8.9							CL	Gravelly CLAY with Silt: moist.		345.0
23.2		MW30-GW060720-340	B	345			SAND and GRAVEL with Silt: moist.	346.0	<p>1-inch SCH 80 0.020-slot screen ZIST nested well (317 to 327 ft bgs).</p>	
4.4										346.0
1.1							SP SM	SAND and GRAVEL with Silt: moist.		346.0
2.3		MW30-SB060720-336	B				Gravelly CLAY with Silt: moist to wet.	349.0	<p>1-inch SCH 80 0.020-slot screen ZIST nested well (317 to 327 ft bgs).</p>	
8.9										349.0
8.9							CL	Gravelly CLAY with Silt: moist to wet.		349.0
8.9		MW30-GW060720-340	B				Clayey GRAVEL: some silt; moist.	350.0	<p>1-inch SCH 80 0.020-slot screen ZIST nested well (317 to 327 ft bgs).</p>	
8.9										350.0
8.9							GC	Clayey GRAVEL: some silt; moist.		350.0
8.9				350			End of boring at 350 ft bgs.	350.0	<p>1-inch SCH 80 0.020-slot screen ZIST nested well (317 to 327 ft bgs).</p>	

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL BORING/WELL NUMBER MW-31  
 PROJECT NAME 700 S 1600 E PCE Plume DATE DRILLED 6/9/2020 - 6/12/2020  
 LOCATION Salt Lake City, UT CASING TYPE/DIAMETER 1-inch SCH 80 PVC  
 DRILLING METHOD Sonic SCREEN TYPE/SLOT 1-inch SCH 80 0.020-slot  
 SAMPLING METHOD Sonic Grab GRAVEL PACK TYPE #10/20 sand  
 GROUND ELEVATION (FT MSL) 4655.22 GROUT TYPE/QUANTITY Bentonite Grout  
 TOP OF CASING (FT MSL) See Table 5 DEPTH TO WATER (FT BGS) \_\_\_\_\_  
 LOGGED BY Joe Miller GROUND WATER ELEVATION (FT MSL) \_\_\_\_\_  
 REMARKS Groundwater was encountered at approximately 130 feet bgs.

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							Hydrovac to 10 ft bgs.		
8.6	0	MW31-SB060920-15		5					
3.9				10	GM		Silty GRAVEL with Sand: reddish brown (5 YR 5/4); 50% gravel; 25% sand; 25% silt; elongated; dry.	10.0	
19.2	0			12			Gravelly SILT: brown (7.5 YR 4/4); moist.	12.0	
7		MW31-SB060920-23		15	ML				
82.1				18	CL		Silty CLAY with Gravel: brown (7.5 YR 4/4); moist.	18.0	
12				20	CL		Silty CLAY with Gravel: brown (7.5 YR 4/4); loose; coarse gravel; moist.	20.0	
14.9				22	ML		Gravelly SILT with Sand: 50% silt; 30% gravel; 20% sand; moist.	22.0	
7.6				24	ML		Gravelly SILT with Sand: same as above, becomes dry.	24.0	
21.6				25	ML		Gravelly SILT with Sand: 50% silt; 30% gravel, up to 4 inches in diameter; 20% sand; moist.	26.0	
14.4				27	ML		Gravelly SILT with Sand: 50% silt; 30% gravel, up to 4 inches in diameter; 20% sand; moist.	27.0	
61.5				30	GM		Silty GRAVEL with Sand: brown (7.5 YR 4/4); 40% gravel, some large up to 4 inches, poorly graded; 10% sand; 40% silt; moist to dry.		
30.4				31			Color changes to white (7.5 YR 8/1); hard rock layer; powdery; dry.	31.0	
13.3				32	CL		Silty CLAY: reddish brown (5 YR 4/4); stiff; moist.	32.5	
13.3				35	GM		Silty GRAVEL: reddish brown (5 YR 4/4); 50% Gravel (50%-PG, Sand (10%)- F-C, Silt (40%). Loose; Moist .		
8.9									
4.2									
12.9									
20.3									
27.9									

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555 17th Street, Suite 500  
 Denver, CO 80202  
 (303) 383-2300

# BORING/WELL CONSTRUCTION LOG



PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-31

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 6/9/2020 - 6/12/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM		
9.4		MW31-SB060920-45	B					36.0	 <p>← Hydrated bentonite pellets (14 to 135 ft bgs).</p>		
147								Silty CLAY: reddish brown (5 YR 5/4); soft, loose; moist.			
18.9											
20						CL					
42						40	CL			CLAY with Sand: brown (7.5 YR 5/4); 95% clay, 5% sand; soft, moist.	40.0
5.6							GC			Clayey GRAVEL: 75% gravel, poorly graded; 25% clay; moist.	41.5
6.8											42.5
5.7							GM			GRAVEL with Silt and Sand: dark gray (7.5 YR 4/1); 60% gravel, poorly graded, elongated; 20% sand; 20% silt; moist to dry.	
9						45					45.0
16.4							CL			CLAY with Sand: brown (7.5 YR 4/4); 95% clay, 5% sand; soft.	46.5
4		MW31-SB060920-62	B						 <p>← Hydrated bentonite pellets (14 to 135 ft bgs).</p>		
6.2							GP			GRAVEL with Silt and Sand: brown (7.5 YR 5/3); 70% gravel; 20% sand, poorly graded; 10% silt; moist to dry.	
2											50.0
25.2						50	GP			GRAVEL with Silt and Sand: brown (7.5 YR 4/4); 90% gravel; 5% sand, poorly graded, 5% silt; loose; moist to dry .	
11.7							CL			Silty CLAY with Gravel: brown (7.5 YR 4/4); loose, crumbles easily.	52.0
2.7											53.5
2.7							GP			GRAVEL with Silt and Sand: white (5 YR 8/1) and reddish brown (5 YR 5/3); 90% gravel, 5% sand, 5% silt; loose, poorly graded; moist to dry.	
2.2						55				Gravelly SILT: 60% silt, 40% gravel, poorly graded; 3 inches as silt, moist.	55.0
5.5							ML				58.2
6											60.0
4.5				60	CL		Silty CLAY with Sand: reddish brown (5 YR 4/4); doesn't roll, but sticks together, some gravel less than 0.25 inch in diameter; moist.				
14.3							Silty CLAY with Sand: reddish brown (5 YR 4/4); 98% clay, low plasticity; 2% sand, fine; soft to moderate; moist.	60.0			
19.5											
21.5											
15.4				65	CL						
13.6											
14.2											
5								68.0			
2.9				70	GM		Silty GRAVEL with Sand: reddish brown (5 YR 4/4); 50% gravel, poorly graded, elongated, up to 3 inches in diameter; 40% silt, 10% sand; loose; dry to moist.				
2.1					ML		Clayey SILT with Sand: brown (7.5 YR 5/3); 95% silt and clay, 5% sand, trace gravel, compact, soft to moderately hard; moist.	70.0			
1.5								72.5			
1.5					SM		Silty SAND with Gravel: brown (7.5 YR 5/4); 60% sand, 40% gravel; loose; moist.				
11.6								74.0			
				75			GRAVEL with Silt and Sand: white/pinkish; 60% gravel, poorly				

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-31

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 6/9/2020 - 6/12/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
4.1		MW31-SB060920-82	B	76.0	GP		graded, trace 4 inch round pieces; 20% sand; 20% silt; loose.	76.0	
2.5	GM			GRAVEL with Silt and Sand: reddish brown (5 YR 4/4); 70% gravel, poorly graded, some 2 to 3 inches in diameter; 15% sand; 15% silt; dry to moist.					
4.2	GP								
3	GM								
4.4	CL			80	Silty CLAY: 6 inches of silty clay with gravel.		80.0		
5.3	GP			80.5	GRAVEL with Silt and Sand: reddish brown (5 YR 4/4); 90% gravel, coarse, poorly graded, 5% sand, 5% silt; loose; dry to moist.		82.5		
48	CL			82.5	Silty CLAY with Gravel and Sand: reddish brown (2.5 YR 4/4); 80% silty clay, 20% sand and gravel; compact; moist.		84.0		
26.3	GP			84.0	GRAVEL with Silt and Sand: reddish brown (5 YR 4/4); 90% gravel, coarse, poorly graded, some 2 inch gravel, elongated; 5% sand, 5% silt, loose; dry to moist.				
13.3	GP			85					
19.2	GP								
16.6	GP								
12.1	GP								
14.3	GP	MW31-SB060920-94	B	90	GP	GRAVEL with Silt and Sand: reddish brown (5 YR 4/4); 90% gravel, poorly graded, 5% sand, 5% silt and clay; loose.	90.0		
19.4	GP			91.0	GRAVEL: light gray (5 YR 7/1); powdery gravel; loose; dry.	92.2			
46.1	GP			92.2	GRAVEL with Sand: reddish brown (5 YR 5/4); 90% gravel, 10% sand, poorly graded, loose; dry to moist.				
12.4	GP			95					
66.2	GP								
37.2	CL			96.0	Silty CLAY with Gravel: reddish brown (5 YR 5/4); 90% silty clay; 10% sand and gravel; stiff.	97.0			
15.2	GP			97.0	GRAVEL with Sand and Silt: white (2.5 YR 8/1); 90% gravel, poorly graded, up to 2 inches in diameter; 5% sand; 5% silt; loose; dry.				
5.4	GP			100					
17.4	ML			100.0	Silty GRAVEL with Sand: white (5 YR 8/1); 70% silt; 30% gravel, poorly graded, up to 4 inches in diameter; trace sand; loose, powdery; dry.	102.5			
30.9	SM			102.5	GRAVEL with Sand and Silt: white (5 YR 8/1); 60% gravel, poorly graded; 20% silt; 10% sand; loose; dry.	104.0			
43.1	SM	104.0							
30	ML	105	Clayey SILT with Sand: 5 YR 5/5; Clayey Silt (99%), Sand (<1%); Moist .						
9.9	ML	105							
5.8	GP	107.5							
17.3	GP	107.5	GRAVEL with Sand and Silt: 80% gravel, poorly graded; 10% sand; 10% silt; loose; moist to dry.	109.0					
4.4	GP	109.0							
13.8	GP	110	GRAVEL with Silt: 80% gravel; 20% silt; loose.	110.0					
47.6	CL	110	Silty CLAY with Sand: dark reddish brown (2.5 YR 3/4); 99% clayey silt; 1% sand; moist.						
44.4	CL	112.8							
58.3	GM	112.8	Silty GRAVEL: dark reddish brown (2.5 YR 3/4); poorly graded; loose to compact; moist.	115.0					
39	GM	115							

Hydrated bentonite pellets (14 to 135 ft bgs).

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20

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PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-31

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 6/9/2020 - 6/12/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
2.5		MW31-SB061020-133	B	116.0	CH		Soft CLAY: brown (7.5 YR 5/4); High Plasticity, Cohesive; Moist.	116.0		
				116.5	SM		Silty SAND: reddish brown (5 YR 4/4); 50% Sand, 50% Silt - 6" layer.	116.5		
10.3						CL		Silty CLAY: reddish brown (5 YR 4/4); 95% Silty Clay, low plasticity; 5% Gravel; trace sand; can't roll or form; non-cohesive; soft and loose; moist.		120.0
3.3						GP		GRAVEL with Sand and Silt: pinkish gray (7.5 YR 6/2); 80% Gravel, coarse, poorly graded; 10% Sand; 10% Silt; Dry.		122.0
7.7						CL		Silty CLAY with Gravel: reddish brown (5 YR 5/4); 6 inch of very stiff.		122.5
12.3						GP		GRAVEL: white (7.5 YR 8/1); 50% Gravel; powdery gravel, loose; dry.		125.0
18.9						GP		GRAVEL with Silt and Sand: brown (7.5 YR 5/3); 80% Gravel, coarse, poorly graded; 10% Sand; 10% Silt; Dry.		126.5
15.1						GP		Silty GRAVEL: brown (7.5 YR 5/3); 60% Gravel, coarse, poorly graded; 30% Silt; 10% Sand; Medium Dense; Dry.		127.5
5.2						GP		GRAVEL: white (7.5 YR 8/1); powdery gravel, poorly graded, coarse; very hard drilling.		129.5
11.9						CL		Silty CLAY with Gravel: poorly graded, coarse, very hard drilling; moist.		130.0
4		MW31-GW061020-138	B	130.0	GM		Silty GRAVEL: light brown (7.5 YR 6/3); 70% Gravel; 30% Silt; loose, may have been wet but dried due to heat; moist to wet.	132.0		
16.6						GP		GRAVEL with Silty Clay: 80% Gravel, 20% Silty Clay, same sand, poorly graded, may have been wet.	134.0	
4						GP		GRAVEL with some Silt: pinkish white (7.5 YR 8/2); coarse, poorly graded; very loose; dry.	137.5	
17.4						GM		Silty GRAVEL: reddish brown (2.5 YR 5/4); 6 inches of hard silty gravel, coarse, loose.	138.0	
14.2						CL		Silty CLAY: yellowish red (5 YR 4/6); 98% silt clay, 2% gravel; stiff, low plasticity; moist to dry.	140.5	
31.8						CL		Silty CLAY with Gravel: yellowish red (5 YR 4/6); 60% silty clay; 40% gravel; loose, easy to break up; moist to dry.	145.5	
9.4						GM		GRAVEL with Silt: brown (7.5 YR 4/4); 60% gravel; 40% silt; loose, about 1 inch wet, then back to very stiff; wet.	147.0	
16						CL		Silty CLAY: strong brown (7.5 YR 4/6); Very Stiff, Low Plasticity, less than 1% gravel.	150.0	
0.4						CL		CLAY with Silt and Sand: yellowish red (5 YR 4/6); 95% clay, 5% sand/silt (<5%); soft, medium plasticity; moist.	151.0	
6						CL		Silty CLAY with Gravel: 90% silty clay; 10% gravel; compact.	152.0	
15.5				GM		Silty Clayey GRAVEL: reddish brown (5 YR 5/4).	154.0			
8.9				GP		GRAVEL with Sand and Silt: yellowish red (5 YR 4/6); 90%	155.0			

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-31

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 6/9/2020 - 6/12/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
8.4		MW31-SB061120-215	B	-				197.0	<p>1-inch SCH 80 0.020-slot screen ZIST nested well (190 to 200 ft bgs).</p>	
13.1										
3.1										
19.2							CL	Gravelly CLAY with Sand: light brown (7.5 YR 6/4); same as above except larger gravel - 2 to 4 inches in diameter; wet.		199.0
						200	CL	Silty CLAY: yellowish red (5 YR 4/6); very stiff, low plasticity, can't roll/form.		200.0
8.1								Silty CLAY: brown (7.5 YR 4/4); stiff, medium plasticity; moist.		
10.9							CL			
15.2										
15.1										204.0
5.4					B	205	GC	Silty CLAY with Gravel and Sand: 60% Gravel and Sand; 40% Silty Clay; Loose; Wet.		206.0
10.1						Silty CLAY: brown (7.5 YR 4/4); Stiff; Moist.				
1.6					CL					
0.8										
				210		Silty CLAY: brown (7.5 YR 4/4); Medium Plasticity; Moist.	210.0			
1.1										
1.6					CL					
1.5										
1.2										
			B	215		Silty CLAY: strong brown (7.5 YR 5/6); Trace Sand, Cohesive, Medium to Stiff, High Plasticity; Moist to Dry.	215.0	Hydrated bentonite pellet seal (202 to 225 ft bgs).		
1.4										
1.6										
31										
10.6					CH					
				220			222.0			
56										
7.6										
67.6			B	225						
3.1					ML	Gravelly SILT: brown (7.5 YR 5/3); same as above, becomes wet.				
				230			230.0	#10/20 sand filter pack (225 to 240 ft bgs).		
1.3		MW31-GW061120-230			GM	Silty GRAVEL: brown (7.5 YR 5/3); gravel up to 2 inches in diameter; some sand; loose; wet.				
1.4										
2			B		CL	Silty CLAY: brown (7.5 YR 5/3); silty clay, medium plasticity.	233.0	1-inch SCH 80 0.020-slot screen ZIST nested well (228 to 238 ft bgs).		
1.8						Silty Clayey GRAVEL: light brown (7.5 YR 6/3); 60% gravel,	234.0			
				235						

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWN01.GDT 12/17/20





## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-31

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 6/9/2020 - 6/12/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
5.7		MW31-SB061220-289			CL		gravel; medium stiff.	276.0		
6.3					CL		Silty CLAY with Gravel: yellowish red (5 YR 4/6); same as above except lower plasticity; moist to dry.			
4.4					CL					
4.4				280				282.0		
15.6						GC		Clayey GRAVEL: brown (7.5 YR 4/4); soft; moist to wet.		283.0
9						CL		Silty CLAY with Sand: brown (7.5 YR 4/4); Less than 1% sand, stiff to moderately stiff, low plasticity; moist.		
10.2				285						
7.3						CL				286.5
12.4						GW		GRAVEL: pinkish gray (7.5 YR 7/2); very hard, cemented; dry.		
9.3										289.0
22.8					CL		Gravel is loose. Silty CLAY with Sand: brown (7.5 YR 5/3); 90% silty clay, low plasticity; 10% sand; dry.	290.0		

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER	238824.6495-F3048-005.DRILL	BORING/WELL NUMBER	MW-32
PROJECT NAME	700 S 1600 E PCE Plume	DATE DRILLED	6/22/2020 - 6/28/2020
LOCATION	Salt Lake City, UT	CASING TYPE/DIAMETER	1-inch SCH 80 PVC
DRILLING METHOD	Sonic	SCREEN TYPE/SLOT	1-inch SCH 80 0.020-slot
SAMPLING METHOD	Sonic Grab	GRAVEL PACK TYPE	#10/20 sand
GROUND ELEVATION (FT MSL)	4566.22	GROUT TYPE/QUANTITY	Bentonite Grout
TOP OF CASING (FT MSL)	See Table 5	DEPTH TO WATER (FT BGS)	
LOGGED BY	Whitney Treadway, Kimberly Myers	GROUND WATER ELEVATION (FT MSL)	
REMARKS	Groundwater was encountered at approximately 95 feet bgs.		

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							Hydrovac to 10 ft bgs. Silty GRAVEL.		
				5	GM				
0.3	0.082			10	GP		GRAVEL with Sand and Clay: reddish brown (5 YR 4/4); 50% gravel and cobbles, poorly graded, mostly coarse, angular to subangular to subrounded; 40% sand, poorly graded, mostly fine to medium, subangular to subrounded; 10% clay, medium plasticity; moist. Gravel and cobbles within clay. Same as above except 30% sand, 20% clay.	10.0	
7.1	0.67	MW32-SB062220-14		15	SP		SAND with Gravel and Clay: reddish brown (5 YR 4/4); 60% sand, poorly graded, mostly fine to medium subangular to subrounded; 30% gravel, well graded, fine to coarse, cobbles; 10% clay matrix. Less lithified than above. Same as above except less lithified.	15.0	
3.1	0.37			20	SP			20.0	
1.3	0.094			22	SP		SAND with Gravel and Clay: reddish brown (5 YR 4/4); 50% sand, poorly graded, mostly fine to medium, subangular to subrounded; 40% gravel and cobbles, poorly graded, coarse, subangular to subrounded, up to 6 inches in diameter; 10% clay; moist.	22.0	
6.2	0.223			25	SC		Clayey SAND and Gravel: reddish brown (5 YR 4/4); 60% sand, poorly graded, fine to medium, subangular to subrounded; 20% gravel and cobbles, well graded, fine to coarse, subangular to subrounded, up to 3 inches in diameter; 20% clay - matrix, medium plasticity; slightly lithified; moist. Same as above but sand is well graded, fine to coarse, moist.	25.0	
15.3	0.12								
7.8	0.134								

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20

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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-32

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 6/22/2020 - 6/28/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
6.7	0.098	MW32-SB062220-27	B	-	SC		Clayey SAND and GRAVEL: reddish brown (5 YR 4/4); 50% sand, poorly graded, fine to coarse, mostly fine to medium, subangular to subrounded; 30% gravel and cobbles, well graded, fine to coarse, angular to subrounded, up to 5 inches; 20% clay, medium plasticity; slightly lithified, gravel content is light gray material; moist.	28.0	
37.3	0.133			-	GC		Same as above except 40% sand, 40% gravel, and 20% clay. Large Cobbles, 7 inches in diameter. Less lithified than 25 to 27 ft bgs.		
11.2	0.014			-	SC		Clayey SAND with Gravel: reddish brown (5 YR 4/4); 60% sand, poorly graded, fine to medium, subangular to subrounded; 20% gravel, well graded, fine to coarse, angular to subrounded, lithified fragments of gravel; 20% clay, medium plasticity; moist. Gravel includes light gray fragments.	30.0	
56.1	0.432			-	CL		CLAY with Gravel: reddish brown (5 YR 4/4); 70% clay, medium to high plasticity; 30% gravel, well graded, fine to coarse, subangular to subrounded, up to 5 inches; lithified.	35.5	
32.1	0.47			-	SC		Clayey SAND with gravel: reddish brown (5 YR 4/4); 50% sand, poorly graded, mostly fine to medium; 30% gravel and cobbles, well graded, fine to coarse, subangular to subrounded, up to 4 inches; 20% clay, medium plasticity; moist.	37.0	
93.5	0.492			-	SC		Same as above except 40% sand, 40% gravel, 20% clay.	40.0	
12	0.323			-	CH		CLAY: reddish brown (5 YR 4/4); 80% clay, high plasticity; 20% gravel, poorly graded, fine to coarse, mostly coarse, subrounded, up to 4 inches; gravel in clay matrix; moist.	42.0	
4.9	0.119			-	SP		SAND with Gravel and Clay: reddish brown (5 YR 4/4); 60% sand, poorly graded, fine to medium, subangular to subrounded; 30% gravel, well graded, fine to coarse, up to 4 inches; 10% clay; moist.	44.5	
0.5	0.107			-	CH		CLAY with Sand: reddish brown (5 YR 4/4).	46.0	
16	0.199			-	CH		CLAY with Sand: reddish brown (5 YR 4/4); 70% clay, 20% sand, 10% gravel. Near 48 ft bgs, gravel is fine to coarse, mostly coarse, subangular to subrounded, up to 4 inches, in clay matrix. Clay is slightly mottled with strings of light tan material like above.	48.0	
7.6	0.1			-	CH		Sandy CLAY: reddish brown (5 YR 4/4); 60% clay, high plasticity, matrix; 30% sand, poorly graded, fine, subangular to subrounded; 10% gravel, well graded, fine to coarse; slightly lithified. Cool, moist, trace pockets of wetness near 48 ft bgs.	50.0	
4.6	0.36			-	SC		Clayey SAND with Gravel: reddish brown (5 YR 4/4); 60% sand, poorly graded, fine to medium, subangular to subrounded; 20% gravel, well graded, fine coarse, subangular to subrounded, up to 4 inches; 20% clay, medium plasticity, clay matrix; slightly lithified.	51.0	
6.3	0.344	-	CH		CLAY with Sand and Gravel: pink (7.5 YR 7/3); 60% clay, high plasticity; 20% gravel and cobbles, well graded, fine to	53.0			
2.8	0.326								
8.4	0.174								
7.2	0.327								

Hydrated bentonite pellets (22 to 111 ft bgs).

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume

BORING/WELL NUMBER MW-32  
 DATE DRILLED 6/22/2020 - 6/28/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
17.5	0.142	MW32-SB062220-55	B	55	CL		coarse, up to 7 inches; 20% sand, well graded, fine to coarse, subangular to subrounded; moist. Clay is mottled with red and less gravel at 52.5 ft bgs.	54.0	
6.8	0.191			56.0	CL		Sandy CLAY: reddish brown (5 YR 4/4); 55% clay, medium plasticity; 45% sand, poorly graded, fine to medium, subangular to subrounded; trace gravel.	56.0	
5.5	1.12			58.0	CH		Sandy CLAY with Gravel: reddish brown (5 YR 4/4); 40% clay, medium plasticity, matrix; 20% sand, poorly graded, fine to medium, subangular to subrounded; 20% gravel, well graded, fine to coarse, subangular to subrounded; slightly lithified; moist.	58.0	
0.3	0.704			60.0	SP		CLAY with Sand and Gravel: reddish brown (5 YR 4/4); 70% clay, high plasticity; 20% sand, poorly graded, fine to medium, subangular to subrounded; 10% gravel, well graded, fine to coarse, subangular to subrounded; moist.	60.0	
11.9	0.444			62.5	CH		SAND with Gravel and Clay: reddish brown (5 YR 4/4); 60% sand, poorly graded, fine to coarse, mostly fine to medium, subangular to subrounded; 30% gravel, well graded, fine to coarse, subrounded, up to 3 inches; 10% clay; trace silt; moist.	62.5	
8.8	0.173			64.0	CH		Sandy CLAY: brown (7.5 YR 4/3); 70% clay, medium to high plasticity; 30% sand, poorly graded, fine, subangular to subrounded; trace coarse sand and fine gravel; moist.	64.0	
1.4	0.107			66.5	CH		Sandy CLAY: reddish brown (5 YR 5/4) and pink (5 YR 7/4); clay is hard, less sand (15%); mottled.	64.0	
0.6	0.35			68.0	CH		CLAY with Sand and Gravel: reddish brown (5 YR 5/4); 60% clay, high plasticity; 25% sand, poorly graded, mostly fine to medium, subangular to subrounded; 15% gravel, poorly graded, mostly coarse, subangular to subrounded, up to 2 inches; hard. More lithified at 64 and 66.5 ft bgs.	66.5	
6.9	0.36			69.0	CH		CLAY with Sand and Gravel: 60% clay, medium to high plasticity; 25% sand, poorly graded, fine to coarse, mostly fine to medium, subangular to subrounded; 15% gravel, poorly graded, fine to coarse, mostly fine; subangular to subrounded, up to 2 inches. Lithified clay matrix around sand and gravel.	68.0	
4.9	0.41			70.0	CH		Clayey SAND with Gravel: reddish brown (5 YR 4/4); 60% sand, poorly graded, fine to medium, subangular to subrounded; 20% clay; 20% gravel, well graded, fine to coarse, subangular to subrounded, up to 4 inches; moist.	69.0	
6	0.361			74.0	CH		Sandy CLAY: reddish brown (5 YR 4/4); 60% clay; 35% sand; 5% gravel (5%); soft.	70.0	
9.6	0.632			77.0	CH		Sandy CLAY: reddish brown (5 YR 5/4); 70% clay, medium to high plasticity; 30% sand, poorly graded, mostly fine, trace medium and coarse; trace fine gravel; soft; moist.	74.0	
1.1	0.761			80.0	CH		Sandy CLAY: reddish brown (5 YR 5/4); 60% clay, medium to high plasticity; 30% sand, poorly graded, fine, trace medium and coarse, subangular to subrounded; 10% gravel, poorly graded, fine to coarse, mostly fine, subangular to subrounded, up to 5 inches; trace large cobbles; soft to stiff; moist with wet pockets. Lenses of green and grayish blue crushed rock segments.	77.0	
1.8	0.761			82.0	CH		Sandy CLAY: ; 70% clay; 30% sand, fine, trace medium and coarse; sticky and soft; moist.	80.0	
			B	80	CH		CLAY with Sand: reddish brown (5 YR 4/4); 80% clay, high plasticity; 20% sand, poorly graded, fine, subangular to subrounded; trace gravel, coarse; soft; moist.	82.0	

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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-32

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 6/22/2020 - 6/28/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
4.9	0.466	MW32-SB0622320-84	B		CH		CLAY with Sand: 70% clay; 30% sand. Sandy wet lens with 5 inch cobble.	83.5		
17	0.406							Large Cobble, diameter of core barrel and approximately 7 inches long.		84.1
4.1	0.122				GW			GRAVEL with Sand: reddish brown (5 YR 4/4); 50% gravel and cobbles, well graded, fine to coarse, subangular to subrounded, up to 4 inches; 30% sand, poorly graded, mostly fine to medium, subangular to subrounded; 20% clay matrix; moist.		
2.2	0.191						Same as above except 40% gravel, up to 6 inches; 20% sand; 20% clay.			
8.8	0.04				CL		Same as above - wet lens 88 to 88.5 ft bgs (gravel, cobbles, sand with clay matrix).	89.0		
1.6	0.015				GW		Sandy CLAY with Gravel: reddish brown (5 YR 4/4); 60% clay, medium plasticity; 30% sand, poorly graded, mostly fine to coarse, some coarse, subangular to subrounded; 10% gravel, poorly graded, fine to coarse, mostly fine, angular to subrounded; hard; moist.	90.0		
1.4	0.264				ML		Sandy GRAVEL with Silt: reddish brown (5 YR 4/4); 50% gravel, fine to coarse, subangular to subrounded; 35% sand, fine to coarse; 35% silt; loose; medium dense; wet.	91.7		
3.9	0.18		B	95	GM		Clayey SILT: trace gravel, cohesive, stiff, wet.	94.6		
1.1	0.111						Silty GRAVEL: reddish brown (5 YR 4/4); fine to coarse gravel, 6 inch cobble, cohesive, dense, wet.	96.0		
2.6	0.184	MW32-SB062320-99					Sandy GRAVEL with Silt: reddish brown (5 YR 4/4); 60% gravel, 4 to 6 inch cobbles, subangular to subrounded; 30% sand; 10% silt; wet. Core was cool.			
9.7	0.13	MW32-GW062320-100					CLAYY SAND and GRAVEL: reddish brown (5 YR 4/4).	100.0		
10	0.161				CH		CLAY with Sand and Gravel: brown (7.5 YR 4/4); 70% clay, medium to high plasticity; 25% sand, poorly graded, fine, subangular to subrounded; 5% gravel, poorly graded, coarse, subangular to subrounded; stiff; wet.	100.5		
11.2	1.27	MW32-SB062420-105	B	105	CH		CLAY: brown (7.5 YR 4/4); 90% clay, high plasticity; 10% sand, poorly graded, very fine to fine, subangular to subrounded; soft; moist.	102.0		
12.1	1.18				CH		CLAY: brown (7.5 YR 4/4); 100% clay, high plasticity; trace fine sand; stiff; moist.	104.0		
10	1.32				CH		CLAY: brown (7.5 YR 4/4); 80% clay, high plasticity; trace fine sand; 20% silt; stiff; moist.	106.0		
					CH		CLAY: brown (7.5 YR 4/4); 70% clay, high plasticity; 20% silt; 10% sand, fine; stiff; wet.	108.0		
			B	110	SC		CLAY: brown (7.5 YR 4/4); 70% clay, high plasticity; 20% silt; 10% sand, fine; stiff; wet.	110.0		
							Clayey SAND and GRAVEL: wet.	110.5		

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-32

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 6/22/2020 - 6/28/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
8.8	0.886	MW32-GW062420-120	B	-	CH		Sandy CLAY: brown (7.5 YR 4/4); 70% clay, high plasticity; 30% sand, poorly graded, fine to coarse, mostly fine, subangular to subrounded; stiff; moist with wet lenses. Large Cobble at 112.5 ft bgs with black staining (looks like charcoal) and reddish iron oxide staining. Same as above, including lenses of wet sand and gravel with in clay matrix; 80% clay, 10% sand, and 10% gravel.		
11	6.4			115	GC		Clayey GRAVEL with Sand: brown (7.5 YR 4/4); 50% gravel, well graded, fine to coarse, subangular to subrounded, up to 5 inches; 30% sand, well graded, fine to coarse, subangular to subrounded; 20% clay; wet.	115.0	
8.5	0.162			-	CH		Sandy CLAY: brown (7.5 YR 4/4); 60% clay, high plasticity; 30% sand, poorly graded, very fine to fine, subangular to subrounded; 10% silt; stiff; moist.	119.0	
3.8	0.134	MW32-SB062420-127	B	120	GW		Sandy GRAVEL with Clay: brown (7.5 YR 4/4); 50% gravel, well graded, subangular to subrounded, up to 3 inches; 40% sand, well graded, fine to coarse, subangular to subrounded; 10% clay, low plasticity; wet.	120.0	
4.6	0.387			-	CL		CLAY: 95% clay, medium plasticity; 5% sand, very fine; trace gravel; stiff; moist.	124.5	
1.2	1.22			125	ML		SILT: 95% silt; 5% sand, very fine; very stiff; dry to moist.	126.5	
6.3	0.333	MW32-SB062420-127	B	-	CH		Sandy CLAY: 80% clay, medium to high plasticity; 20% sand, poorly graded, very fine to fine, subangular to subrounded.	127.5	
1.2	0.473			130	SW		Same as above except 70% clay, 20% sand, 10% gravel, coarse, up to 3 inches, subangular to subrounded.	131.0	
3.7	0.361			-	SW		Clayey SAND with Gravel: 70% sand, well graded, fine to coarse, subangular to subrounded; 15% clay; 15% gravel, well graded, up to 3 inches; moist to wet.	135.5	
2.9	0.234	MW32-SB062420-127	B	-	SW		Same as above except 50% sand, 35% clay, low plasticity, and 15% gravel, up to 3 inches; medium dense; moist to wet.	135.5	
4.1	0.276			135	CL		Sandy CLAY: yellowish red (5 YR 4/6); 60% clay; 40% sand, trace gravel; soft; moist.	138.4	
3.2	0.228			-	CL		Sandy CLAY with Gravel: yellowish red 5 YR 4/6); 50% clay; 35% sand; 15% gravel, coarse, angular to subrounded, up to	138.4	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-32

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 6/22/2020 - 6/28/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
3.4	0.285	MW32-SB062420-142	B	140	CL		4 inches; medium dense to stiff; moist.	140.0		
2	0.24					SW		Gravelly SAND with Clay: reddish brown (5 YR 4/3); 55% sand, well graded, fine to coarse, subangular to subrounded; 25% clay, low plasticity; 20% gravel, well graded, fine to coarse, up to 2 inches; loose; wet.		143.0
7.5	0.369					CL		Sandy CLAY: brown (7.5 YR 4/4); 55% clay, low plasticity; 45% sand, poorly graded, very fine to fine; trace fine gravel, subangular to subrounded; soft becomes medium dense around 144.6 ft bgs; moist to wet.		145.3
2.9	0.408					SW		Gravelly SAND with Clay: 75% sand, well graded, fine to coarse; 15% gravel, fine to medium, subangular to subrounded; 10% clay, low plasticity; wet.		146.4
5.6	0.396					CL		Sandy CLAY with Gravel: brown (7.5 YR 4/4); 65% clay, medium plasticity; 25% sand, poorly graded, trace coarse, very fine to fine; 10% gravel, fine to medium, subangular to subrounded, up to 0.5 inch; medium dense; moist. Become stiff, 85% clay, 15% sand, trace gravel.		149.0
5.5	0.623					ML		SILT with Sand: 80% silt; 15% sand, poorly graded, very fine to fine; 5% gravel; moist to wet. Softer near 150 ft bgs, with more sand (up to 40%).		150.0
3.8	0.165					CH		CLAY with Sand: yellowish red (5 YR 4/6); 90% clay; 5% gravel, fine, 5% sand, very fine; soft to medium soft.		
3.6	0.145					CH		Silty CLAY: stiff.		153.5 154.0
7.1	0.356					CL		Sandy CLAY with Gravel: 50% clay, low to medium plasticity; 30% sand, well graded, fine to coarse, subangular to subrounded; 20% gravel, well graded, up to 2 inches, subangular to subrounded.		155.5
8.1	0.139					CL		Gravelly CLAY: 50% clay; 35% gravel, subangular to subrounded, up to 4 inches; 15% sand, well graded; medium dense; wet. Becomes moist and stiff.		159.0
6.1	0.21	MW32-SB062520-165	B	160	ML		Gravelly SILT: dry to moist.	160.0		
6.8	2.02					SM		Silty SAND with Gravel: 50% sand, 25% silt, 25% gravel; wet.	162.0	
5.8	0.111					CL		Gravelly CLAY 60% clay, 25% gravel, 15% sand, well graded; clay increases for 1 ft.	163.0	
9.2	0.309					CL		Gravelly Lean CLAY: ; 60% clay, 30% gravel, 10% sand, well graded.		
7.8	0.004									

Hydrated bentonite pellet seal (125.5 to 167 ft bgs).

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20

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## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-32

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 6/22/2020 - 6/28/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
9.1	0.064	MW32-GW062520-175	B	-	ML		Gravelly SILT: 60 to 65% silt, 30% gravel, 5 to 10% sand.	169.0		
				170	CL		Sandy CLAY: 80% clay, 20% sand, very fine.	169.5		
								Silty SAND with Gravel: 50% sand, 25% silt, 25% gravel.		170.0
1.5	0.113	MW32-GW062520-175	B		SM					
3.8	0.144									
	0.598	MW32-SB062520-186	B	175			GRAVEL with Sand and Silt: 40% gravel, well graded, fine to coarse, subangular to subrounded, up to 3 inches; 30% sand, well graded, 30% silt; wet.	175.0		
0.1	0.195					GM				
2.8	0.37							Same as above with gravel up to 4 inches.		
6.7	0.054	MW32-SB062520-186	B	180						
3.5	0.341	MW32-SB062520-186	B		CL		Sandy CLAY: 70% clay, low plasticity; 25% sand, poorly graded, very fine to fine; 5% gravel, fine to medium; wet.	182.0		
35.5	0.85							3 inch solid rock.		185.0
								Gravelly CLAY: ; 65% clay, medium plasticity; 30% gravel; 5% sand, very fine to fine.		185.3
49		MW32-SB062520-186	B		ML		Gravelly SILT: 70% silt; 25% gravel, angular to subrounded, up to 3 inches; 5% sand, very fine to fine; dry to moist. 1 inch thick hard layers of siltstone.	186.0		
								No Recovery.		188.0
		MW32-SB062520-186	B	190			Lean CLAY with Gravel: 85% clay; 10% gravel, mostly fine, trace cobbles up to 5 inches; 5% sand, very fine to fine; very stiff.	190.0		
6	0.042									
5.2	0.04	MW32-SB062520-186	B		CL					
9.7	0.036			195						

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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-32

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 6/22/2020 - 6/28/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
8.8	0.05	MW32-SB062520-203	B	197.5	ML	[Hatched]	Gravelly SILT: 55% silt; 30% gravel, angular to subrounded, up to 2 inches; 15% sand, well graded, fine to coarse, subangular to subrounded; brittle; stiff to hard.	197.5	[Well Diagram]
				200.0	CL	[Hatched]	Sandy CLAY: 6 inches of sand clay.	200.5	
3.4	0.182				SW	[Dotted]	SAND with Clay and Gravel: 50% sand, well graded, fine to coarse, subangular to subrounded; 30% gravel, well graded, up to 4 inches; 20% clay, low plasticity; wet.	202.0	
9.1	0.34				CL	[Hatched]	CLAY: 60% clay; 35% silt; 5% sand, very fine; trace gravel, fine; moist.	203.5	
					CL	[Hatched]	Gravelly CLAY: 40% clay; 30% gravel, poorly graded, coarse, 0.75 to 2 inches; 20% silt; 10% sand, fine; moist.	205.0	
4.3	1.4	MW32-GW062620-210	B	205	CL	[Hatched]	Sandy CLAY with Gravel: 50% clay; 30% gravel, well graded, angular to subrounded; 20% sand, well graded; moist.	206.5	
6.5	1.2				CL	[Hatched]	CLAY: 60% clay; 30% silt; 10% gravel, fine, subangular to subrounded, up to 0.5 inch.	209.0	
4.5	0.795				ML	[Hatched]	Gravelly SILT: 55% silt, 30% gravel, 15% sand; brittle and soft.	209.5	
					SC	[Dotted]	Clayey SAND with Gravel: 50% sand, 30% gravel, 20% clay.	210.0	
7.3	0.851				CL	[Hatched]	Lean CLAY: 90% clay, low plasticity; 5% gravel, fine; 5% sand, poorly graded, medium to coarse; stiff.	211.5	
			SC	[Dotted]	Clayey SAND and GRAVEL: 4 inch clayey sand and gravel layer.	211.8			
12.4	0.301	MW32-SB062620-223	B		CL	[Hatched]	Lean CLAY: ; 90% clay, low plasticity; 5% gravel, fine; 5% sand, poorly graded, medium to coarse; stiff. Trace coarse gravel. Clay becomes stiffer, seems to have some silt, plasticity content becomes lower. Becomes non-plastic gradually.	217.0	
8.1	0.231				ML	[Hatched]	Sandy SILT: 70% silt, 30% sand, poorly graded, very fine.	219.0	
8.8	0.151				CL	[Hatched]	Sandy CLAY with Gravel.	220.0	
7.9	0.14				CL	[Hatched]	CLAY with Sand: 65% clay; 30% sand, poorly graded, very fine to fine; 5% gravel, fine, subangular to subrounded, up to 0.5 inches, trace coarse up to 2 inches.	220.0	
1.2	0.26				CL	[Hatched]			
1.1	0.116		CL	[Hatched]					
				225					

Hydrated bentonite pellet seal (183 to 257 ft bgs).

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-32

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 6/22/2020 - 6/28/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM		
0.5	0.175	MW32-SB062620-250	B				Same as above except gravel increases to 15%, fine to coarse, mostly fine, up to 2 inches.	226.0			
0.7	0.106				ML		Gravelly SILT: 55% silt; 35% gravel, well graded, fine to coarse, up to 3 inches; 10% sand.				
2.9	0.073					230				230.0	
3.1	0.375						CL	Sandy CLAY: 70% clay, low plasticity; 25% sand, poorly graded, very fine to fine, subangular to subrounded; 5% gravel, fine, trace coarse, up to 1 inch, subangular to subrounded; stiff; moist. Low to no plasticity at 233 ft bgs. Cobbles at 233.5 ft bgs.			
4.8	0.553										235.0
7.8	0.329					235					237.0
2.9	0.356						ML	Gravelly SILT: 55% silt; 30% gravel, well graded, up to 4 inch cobbles; 15% sand, well graded, fine to coarse; very stiff to hard; brittle; dry to moist.			
0.5	0.31						ML	Sandy SILT: yellowish red (5 YR 4/6); 70% silt, non-plastic; 30% sand, poorly graded, very fine to fine; stiff; moist.			
1.3	0.401					240				239.5 240.0	
0.5	0.18						ML	Gravelly SILT: 55% silt; 30% gravel, well graded, up to 4 inch cobbles; 15% sand, well graded, fine to coarse; very stiff to hard; brittle; dry to moist.			
0.4	0.316					245				244.0 245.0	
0.5	0.344						ML	SILT: 95% silt, low to non-plastic; 5% sand, fine, trace coarse.			
0.9	0.241						ML	SILT: 90% silt, low to non-plastic; 5% gravel, fine, subangular to subrounded; 5% sand, fine trace coarse; stiff; moist.			
1.4	0.448					250				247.0 248.5 250.0	
1.7	0.265				CL	Gravelly CLAY: 60% clay, low plasticity; 35% gravel, well graded, up to 2 inches; 5% sand, very fine to fine, trace coarse; medium stiff; moist.					
					ML	Gravelly CLAY: 60% clay, low plasticity; 35% gravel, well graded, up to 2 inches; 5% sand, very fine to fine, trace coarse; medium stiff; moist.					
					ML	Sandy SILT: 80% silt; 20% sand, very fine to fine; trace gravel, fine, subangular to subrounded, up to 0.25 inch; stiff; moist.					
					CL	CLAY with Sand: 90% clay; 10% sand, very fine to fine; medium stiff; moist.					

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-32

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 6/22/2020 - 6/28/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
2.5	0.318	MW32-GW062820-270	B	255	CL		CLAY with Gravel and Sand: 50% clay; 35% gravel, well graded, subangular to subrounded; 15% sand, well graded. Dry to moist at 256 ft bgs; moist.	254.0	<p>#10/20 sand filter pack (257 to 272 ft bgs).</p> <p>1-inch SCH 80 0.020-slot screen ZIST nested well (260 to 270 ft bgs).</p>
2.2	0.315			-	CL		Gravelly CLAY: 60% clay, low plasticity; 25% gravel, well graded, subangular to subrounded, up to 2 inches, trace 4 inch cobbles; 15% sand, well graded; dry to moist.	258.0	
2.7	0.248			-	CL		Gravelly CLAY: 60% clay, low plasticity; 30% gravel, medium to coarse, subangular to subrounded, with cobbles up to 4 inches; 10% sand, well graded, fine to coarse; stiff; moist.	260.0	
11.7	0.155			-	CL		Gravelly CLAY: 60% clay, low plasticity; 25% gravel, well graded, fine to coarse, cobbles up to 3 inches; 15% sand, well graded. Silt from 268.5 to 264 ft bgs. Medium stiff; moist to wet.	267.0	
29.4	0.103			-	CL		Gravelly CLAY: 60% clay, low plasticity; 25% gravel, well graded, fine to coarse, cobbles up to 3 inches; 15% sand, well graded. Silt from 268.5 to 264 ft bgs. Medium stiff; moist to wet.	267.5	
9.5	0.269			-	ML		Gravelly SILT with Sand: dry to moist.	269.0	
17	0.147			-	CL		Gravelly SILT and CLAY: Gravelly Clay is 45% soft clay, 40% gravel, up to 4 inches, 15% sand. Gravelly Silt is 60% silt, non-plastic, 25% gravel, and 15% s, well graded. Brittle, hard, wet.	272.0	
25.3	0.425			-	ML		End of boring at 272 ft bgs.		

WHITNEY'S BORING LOG\_SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume  
 LOCATION Salt Lake City, UT  
 DRILLING METHOD Sonic  
 SAMPLING METHOD Sonic Grab  
 GROUND ELEVATION (FT MSL) 4623.61  
 TOP OF CASING (FT MSL) See Table 5  
 LOGGED BY Joe Miller  
 REMARKS Groundwater was encountered at approximately 130 feet bgs.

BORING/WELL NUMBER MW-34  
 DATE DRILLED 7/9/2020 - 7/12/2020  
 CASING TYPE/DIAMETER 1-inch SCH 80 PVC  
 SCREEN TYPE/SLOT 1-inch SCH 80 0.020-slot  
 GRAVEL PACK TYPE #10/20 sand  
 GROUT TYPE/QUANTITY Bentonite Grout  
 DEPTH TO WATER (FT BGS) \_\_\_\_\_  
 GROUND WATER ELEVATION (FT MSL) \_\_\_\_\_

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							Hydrovac to 8'		<p>← Vault with cement surface seal</p> <p>← Bentonite Grout (2 to 14 ft bgs).</p> <p>← Hydrated bentonite pellets (14 to 18 ft bgs).</p> <p>← #10/20 sand filter pack (18 to 22 ft bgs) with 6-inch stainless steel mesh vapor probe at 20 ft bgs.</p>
29.8	0.086			8.0			Rock/Boulder	8.0	
				9.0			Gravelly SILT	9.0	
6.9	0.034			10.0	ML		Gravelly SILT; 60% silt; 30% fine to coarse elongated 3-4" gravel; 10% sand; yellowish red (5 YR 4/6); Loose.; Dry .	10.0	
32									
27.1	0.035								
				15.0	ML				
23	0.034								
16									
	0.033								
11				17.5			GRAVEL; 100% fine to coarse gravel; loose; pink (5YR 7/3); dry.	17.5	
7.1	0.226				GP				
4.7				20.0			Gravelly SILT; 50% silt; 50% fine gravel; Loose; reddish brown (5YR 5/4); dry to moist.	20.0	
18.3	0.075								
6.9					ML				
22.7	0.045								
16.6									
11.4	0.043			25.0			GRAVEL; 100% fine to coarse gravel; loose; pinkish gray (5YR 7/2); dry.	25.0	
13.1	0.07				GP		Silty GRAVEL; 80% fine to coarse gravel; 20% silt; reddish brown (5YR 5/4) dry to moist.	26.0	
14.4					GM				
	0.1								
8.4									
39.8	0.101			30.0	GM		Silty GRAVEL; 60% fine to coarse gravel; 30% silt; 10% fine sand; looselight reddish brown (5YR 6/4); dry.	30.0	
2.7									
10.5	0.118				ML		Gravelly SILT; 60% silt 40% fine to coarse gravel; loose; reddish brown (5 YR 4/4); Dry.	31.0	
0.7									
	0.11						Silty GRAVEL; 80% fine to coarse gravel; 20% silt; loose; reddish yellow (5 YR 6/5); dry	33.0	
				35.0					

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-34

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 7/9/2020 - 7/12/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
2.5									
2.8					GM				
7.9	0.107								
0.4									
3.2	0.85			40				40.0	
82.3	0.891				GM		Silty GRAVEL; 80% fine to coarse gravel; 20% silt; loose; light reddish brown (5YR 6/3); dry.	42.0	
33.1					GP		GRAVEL with Silt; 85% poorly graded gravel; 15% silt; loose. light reddish brown (5YR 6/3); dry.	43.6	
18.4	0.109				GC		Clayey GRAVEL; cohesive; dry to moist.	44.0	
16.1					CL		Silty CLAY; low plasticity; reddish brown (5 YR 4/4); soft; dry to moist.	45.0	
12.5	0.034			45					
16.6					GM		Silty GRAVEL; 60% fine to coarse gravel; 40% silt; loose; reddish brown (5YR 5/4); dry to moist.	47.5	
9.6	0.177								
15.4					CL		Silty CLAY; low plasticity clay; soft; light reddish brown (5YR 4/6); dry to moist.	50.0	
2.7	0.36								
1.8					CL		CLAY; 90% low plasticity clay; 10% fine gravel; soft, easily breaks up; light reddish brown (5YR 4/6); moist.	52.5	
7.6	0.255								
13.5					CL		Silty CLAY; low plasticity; soft; light reddish brown (5YR 4/6); moist.	56.0	
15.4	0.07								
7.7	0.145			55					
16.2					GP		Silty GRAVEL; 50% fine to coarse poorly graded gravel; 30% low plasticity silt; 20% fine to coarse sand; loose; light reddish brown (5YR 4/6); moist.	57.0	
9.6	0.4								
5.3					ML		Clayey SILT; 95% low plasticity clayey silt; 5% fine gravel: light reddish brown (5YR 4/6); soft; moist.	60.0	
4.1	0.18								
9.1					GM		Silty GRAVEL; 50% poorly graded gravel; 40% silt; 10% fine to coarse sand; loose; light reddish brown (5YR 4/6); dry.	64.0	
25.6	0.05								
16	0.12								
2					CL		Silty CLAY; low plasticity; stiff; reddish brown (5 YR 4/4); dry.	66.0	
3	0.22			65					
20.4							GRAVEL; cemented; white (5YR 8/1); very hard drilling; dry.	68.3	
17.2	0.134								
16.6					GM		Silty GRAVEL; 60% fine to coarse rounded poorly graded gravel; 40% low plasticity silt; loose; yellowish red (5 YR 4/6); dry.	70.0	
4.8	0.205								
6.4					GM		Silty GRAVEL; 50% fine to coarse rounded poorly graded gravel; 50% low plasticity silt; loose; yellowish red (5 YR 4/6); dry.	74.5	
11.1	0.028			70					
10.3									
21.1	0.034								
9.4									
6.2									
				75					

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-34

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 7/9/2020 - 7/12/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
6.5	0.116				GP		Silty GRAVEL; 50% fine to coarse rounded poorly graded gravel; 30% low plasticity silt; 10% fine gravel; loose; yellowish red (5 YR 4/6); dry.	76.0	<p>Hydrated bentonite pellets (22 to 138 ft bgs).</p> <p>Hydrated bentonite pellets (22 to 138 ft bgs).</p>
8.1	0.14				ML		Silty GRAVEL; 50% fine to coarse rounded poorly graded gravel; 50% low plasticity silt; loose; yellowish red (5YR 4/6); dry.		
4.2	0.199			80			- 2 feet no recovery	80.0	
14	0.099				ML		Gravelly SILT; 60% low plasticity silt, 40% gravel; firm; yellowish red (5YR 4/6); dry.	82.0	
13.6	0.114			85			Silty GRAVEL; 50% fine to coarse poorly graded gravel; 50% silt; loose; yellowish red (5YR 4/6); dry.	84.0	
5.4	0.13				GM				
9.7	0.049			90			Silty CLAY; medium plasticity; soft; yellowish red (5YR 4/6); moist.	90.0	
13.3	0.192				CL				
3.7	0.242			94			Sandy GRAVEL; 60% fine to coarse poorly graded gravel; 40% sand; loose; reddish brown (5 YR 4/4); dry.	94.0	
3.5	0.141			95			Gravelly SILT; 60% low plasticity SILT; 40% fine to coarse gravel; dry to moist.	97.0	
4.9	0.043				ML		Silty CLAY; yellowish red (5YR 4/6); moist.	98.7	
3.9	0.026			100			Gravelly SILT; 60% low plasticity SILT; 40% fine to coarse gravel; dry to moist.	100.0	
11.2	0.042				ML		Gravelly SILT; 70% low plasticity SILT; 30% fine to coarse gravel; soft; dry to moist.	102.0	
17.5	0.62				CH		Silty CLAY; medium to high plasticity, trace fine gravel; soft; yellowish red (5YR 4/6); moist.		
11.6	0.172			105					
15	0.166				CH				
10.5	0.172			110					
9.3	0.179				CH				
19.1	0.293				CH				
10.4	0.12				CH				
6.2					CH				
7.6					CH				
5.6					CH				
14.1					CH				
5.8					CH				
9.7					CH				
10.8					CH				
16					CH				
3.6					CH				
5.5					CH				
20.2					CH				
19.7					CH				
5.1					CH				
3.3					CH				
12					CH				

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-34

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 7/9/2020 - 7/12/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM		
1.7	0.076	MW34-SB070820-141	B		CH		Silty CLAY; 95% medium to high plasticity silty clay, 5% fine gravel; soft; yellowish red (5YR 4/6); moist.	116.0			
6.3	0.14			GM		Silty GRAVEL; 50% fine to coarse gravel, 50% low plasticity silt; loose; reddish brown (5YR 5/3); dry.	117.0				
9.9				CL		Silty CLAY; low plasticity, trace fine gravel; soft; yellowish red (5YR 4/6); moist.	118.0				
7.9	0.11			GM		Silty GRAVEL; 50% fine to coarse gravel, 50% low plasticity silt; loose; reddish brown (5YR 5/3); dry.	120.0				
3.4	0.124			CL		Silty CLAY; low plasticity; stiff; reddish brown (5YR 4/4); dry to moist.	123.0				
24.8				GM		Silty GRAVEL; 70% fine gravel, 30% low plasticity silt; loose; reddish brown (5YR 5/3); dry.	124.5				
26.7	0.04			B	125	GM		Silty GRAVEL; 50% fine to coarse poorly graded gravel; 45% silt; 5% sand; loose; yellowish red (5YR 4/6); moist; soil core hot from drilling.		130.0	Hydrated bentonite pellets (22 to 138 ft bgs).
3.9											
4.9	0.191			B	130	ML		Clayey SILT; 95% low plasticity clayey silt; 5% fine gravel; soft.; moist.		135.0	#10/20 sand filter pack (138 to 152 ft bgs).
6.3											
20.4	0.21	B	135	ML		Clayey SILT; 80% low plasticity clayey silt; 20% gravel; firm to stiff; moist.	137.0	1-inch SCH 80 0.020-slot screen ZIST nested well (140 to 150 ft bgs).			
57.3									0.199	ML	
43.8	0.04	B	140	GM		Silty GRAVEL; 70% fine to coarse gravel; 30% silt; loose; reddish brown (5YR 4/4); dry to moist.	140.0				
72.1									0.11	GM	
78	0.05	B	145	ML		Silty GRAVEL; 50% fine to coarse gravel; 30% silt; 20% fine to coarse sand; loose; yellowish red (5YR 4/6); wet.	147.0				
43.7									0.12	ML	
2.5	0.081	B	150	GM		Clayey SILT; 95% low plasticity clayey silts; 5% fine gravel; stiff; yellowish red (5YR 4/6); moist.	150.0				
2.8									0.26	GM	
25	0.78	B	155	ML		Silty GRAVEL; 50% fine to coarse gravel; 30% silt; 20% fine to coarse sand; loose; yellowish red (5YR 4/6); wet.	151.0				
12.4									0.111	ML	
11.5	0.13	B	155	GM		Clayey SILT; low plasticity clayey silts; stiff; yellowish red (5YR 4/6); moist.	153.0				
3.5									0.112	GM	
8.6	0.112	B	155	GM		Silty GRAVEL; 60% fine to coarse gravel; 40% silt; loose; yellowish red (5YR 4/6); wet.	155.0				
5.4									0.112	GM	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-34

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 7/9/2020 - 7/12/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM				
2.7	0.33	MW34-SB070820-165	B	-	CL		Silty CLAY; low plasticity; soft; reddish brown (5YR 4/4); moist to wet.	160.0					
3.1	-			-			-			-	-	-	
2.5	0.395			-			-			-	-	-	
5.1	-			-			-			-	-	-	
6.1	0.272			160			-			ML		SILT; low plasticity silt; firm to stiff; yellowish red (5YR 4/6); saturated; wet.	161.5
6.7	-			-			-			GM		Silty GRAVEL; 70% fine to coarse gravel; 30% silt; loose; yellowish red (5YR 5/6); saturated wet.	163.0
3.2	0.13			-			-			CL		Silty CLAY; 85% silty clay; 15% fine gravel; firm to stiff; reddish brown (5YR 4/3); moist.	166.0
7.8	0.16			165			-			ML		Gravelly SILT; 70% silt; 30% fine gravel; soft; reddish brown (5YR 4/4); wet.	168.0
13.9	0.113			-			-			ML		- 6" boulder; hard.	168.5
0.9	0.08			-			-			ML		Gravelly SILT; 70% silt; 30% fine gravel; cemented in places; firm to stiff; reddish brown (5YR 4/4); Dry. Very Hot Sample- Hard Drilling.	170.0
1.2	0.135	-	-	ML		Gravelly SILT; 60% silt; 30% fine gravel; 10% fine to coarse sand; soft; yellowish red (5YR 4/6); wet.	171.3						
0	0.96	-	-	ML		SILT; low plasticity clay; firm to stiff; yellowish red (5YR 4/6); moist.	172.0						
0.4	0.27	-	-	ML		Gravelly SILT; 60% silt; 30% fine gravel; 10% fine sand; soft; yellowish red (5YR 4/6); wet.	173.0						
0	0.18	-	-	ML		SILT; 95% low plasticity cohesive silt; 5% fine gravel; very stiff; yellowish red (5YR 4/6); moist.	176.0						
2.4	0.074	-	-	ML		Gravelly SILT; 60% silt; 30% fine gravel; 10% fine sand; firm; yellowish red (5YR 4/6); wet.	179.5						
0	0.215	MW34-GW070820-180	B	180	CL		CLAY; low plasticity clay; hard, reddish brown (5YR 5/4); dry to moist.	180.0					
0.3	0.06			-	ML		SILT; 95% low plasticity silt; 5% fine gravel; soft to stiff; reddish brown (5YR 4/3); moist to wet.	186.0					
0.1	0.215			-	ML		Gravelly SILT; 50% low plasticity silt; 30% fine to coarse gravel; 20% fine sand; firm; wet.	187.0					
0.2	0.06			-	ML		SILT; 95% low to medium plasticity silt; 5% fine gravel; cohesive; reddish brown (5YR 4/4); wet.	190.0					
0.5	0.126	MW34-SB070820-189	B	190	GM		Silty GRAVEL; 60% fine to coarse gravel; 40% Silt; loose; (5YR 4/5); wet.	191.0					
0.9	0.088			-	ML		SILT; 85% low plasticity silt; 15% fine gravel; soft; yellowish red (5YR 4/6); moist to wet.	193.0					
1.5	-			-	CL		CLAY; 90% low to medium plasticity clay; 10% fine gravel; stiff; yellowish red (5YR 4/6); dry.	195.0					

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20





555 17th Street, Suite 500  
 Denver, CO 80202  
 (303) 383-2300

# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-34

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 7/9/2020 - 7/12/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM					
0.9	0.1	MW34-SB070820-205	B	-	CL			199.0						
0.2	0.038			-	CL									
0.5	0.263			200	CL					CLAY; 95% low to medium plasticity clay; 5% fine gravel; stiff; yellowish red (5YR 4/6); dry.	200.0			
0.2	0.32			-	CL					CLAY; 90% low plasticity clay; 10% fine gravel; stiff; yellowish red (5YR 4/6); moist.	203.0			
0.7	0.32			-	CL									
0.3				-										
0.1	0.24			MW34-GW070920-210	B					205	GM		Silty GRAVEL; 70% fine to coarse gravel; 40% silt; loose; yellowish red (5YR 4/6); wet.	210.0
0.7	0.042									-				
1	0.065									-				
0.6	0.065													
0.7														
0.1	0.05			210			Silty CLAY; low to medium plasticity silty clay; trace fine gravel; firm to stiff; yellowish red (5YR 4/6); dry to moist.	210.0						
0.5	0.462													
0.5														
1.2	0.325				CL									
1.8														
1.5	0.142		B	215				216.0						
0.7														
0.9	0.309				CL		Silty CLAY; low to medium plasticity silty clay; trace fine gravel; firm to stiff; yellowish red (5YR 4/6); moist.	218.0						
0.8														
0.9	0.142				CL		Silty CLAY; low to medium plasticity silty clay; trace fine gravel; firm to stiff; yellowish red (5YR 4/6); dry to moist.	220.0						
0.2				220			No Recovery- Wet, lots of water in the hole.	221.0						
1.1					CL		Silty CLAY; 80% low plasticity silty clay; 20% fine to medium sand; stiff; yellowish red (5YR 4/6); moist.	224.0						
0.7														
			B	225	CL		Silty CLAY; 80% low plasticity silty clay; 20% fine to medium sand; stiff; yellowish red (5YR 4/6); moist to wet.	226.0						
0.2		MW34-SB070920-226	B											
1.1					CL		Silty CLAY; 80% low plasticity silty clay; 20% fine to medium sand; firm to stiff; yellowish red (5YR 4/6); moist.	230.0						
0.5														
0.8		MW34-GW070920-230	B	230			Silty CLAY; 80% low plasticity silty clay; 20% fine to medium sand; stiff; yellowish red (5YR 4/6); dry.	230.0						
0.4	0.26													
1.6	0.278				CL			234.0						
1.7							Silty CLAY; 80% low plasticity silty clay; 20% fine to medium							
				235										

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20

Hydrated bentonite pellet seal (187 to 247 ft bgs).





555 17th Street, Suite 500  
 Denver, CO 80202  
 (303) 383-2300

# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-34

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 7/9/2020 - 7/12/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
3.6	0.107	MW34-SB071020-285	B	-				277.0		
5.4				-						
12.3	0.05			-				Clayey Gravel; 70% fine to coarse gravel; 20% silty clay; 10% fine sand; cemented in places; dry to moist; hard drilling.		
1	0.046			280	GC					281.0
3.6	0.225			-				Silty CLAY; 95% medium plasticity silty clay; 5% fine gravel; very stiff to hard; yellowish red (5YR 4/6); dry.		
1.6				-						
6.5	0.236			-						
120				285	CL					289.0
5				-						
22.5	0.04			-						
11	0.2	-								
4.2		-								
1.9	0.5	-		290	CL		Silty CLAY; 80% low to medium plasticity silty clay; 20% fine gravel; very stiff to hard; yellowish red (5YR 4/6); dry.	290.0		
0.9		-								
0.2	0.101	-		290	ML		Gravelly SILT; 60% low plasticity silt; 40% fine to coarse gravel; firm; wet.	291.5		
	0.21	-								
0.1		-					Silty CLAY; 70% low plasticity clay; 20% fine gravel; stiff to hard; reddish brown (5YR 4/4); moist.			
		-								
		-		295			Bottom 5 to 6 feet no recovery.	294.0		
		-								
		-								
15.5	0.16	MW34-SB071020-300	B	300			Silty GRAVEL; 60% Poorly Graded fine to coarse gravel; 40% silt; loose; reddish brown (5YR 4/4); moist to wet.	300.0		
14.4		-								
6.3	0.32	MW34-GW071020-300		-						
8.3		-								
9.9		-								
10.6	0.225	-			305					306.0
5		-								
7.6	0.08	-				ML		Clayey SILT; 90% low plasticity clayey silt; 10% fine gravel; cohesive; firm; reddish brown (5YR 5/3); moist.		307.8
2.4		-								
8	0.021	-				ML		Clayey SILT; 90% low plasticity clayey silt; 10% fine gravel; cohesive; firm; reddish brown (5YR 5/3); moist.		309.0
2		-		310			Lost 1 foot out of bottom.	310.0		
4.2	0.36	-								
17.7		-								
51.3	0.29	-								
4.5		-								
		-		315			GRAVEL; fine to coarse well graded gravel; cemented; white	314.0		
		-						315.0		

Hydrated bentonite pellet seal (262 to 312 ft bgs).

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 12/17/20

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PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-34

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 7/9/2020 - 7/12/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.5	0.34	MW34-GW071220-320 MW34-GW071220-321	B	0.5	GM		(5YR 8/1); dense; dry. Hard Drilling.	317.5	#10/20 sand filter pack (312 to 330 ft bgs).
0.6	0.132			0.6	GM		Silty GRAVEL; 70% Poorly Graded fine to coarse gravel; 30% silt; loose; reddish brown (5YR 4/4); moist.		
0.7	0.09			0.7	GM		Silty GRAVEL; 60% Poorly Graded fine to coarse gravel; 40% silt; loose; reddish brown (5YR 4/4); wet.		
7.8	0.301			320	CL		Silty CLAY; low plasticity silty clay; very stiff; cohesive; reddish brown (5YR 4/4); moist.		
4	0.164			325	CL		Silty CLAY; low plasticity silty clay; very stiff; cohesive; reddish brown (5YR 4/4); moist to wet.		
2.9	0.13			325	CL		Silty CLAY; 90% low plasticity silty clay; 10% fine sand; stiff; cohesive; reddish brown (5YR 4/4); moist.		
3.8	0.285			328	ML		Gravelly SILT; 70% low plasticity silt; 30% fine gravel; stiff; cohesive; reddish brown (5YR 4/4); dry to moist.		
1.9	0.087			330	CL		Gravelly CLAY; 60% low plasticity clay; 40% fine to coarse gravel; cohesive; stiff; light brownish gray (10YR 6/2); dry to moist.		
23.2	0.095			332.5	ML		Clayey SILT; 60% low plasticity silt; 40% clay; cohesive; reddish brown (5YR 4/4); dry to moist.		
14.4	0.153			335	ML		Clayey SILT; 60% low plasticity silt; 40% clay; trace fine gravel; cohesive; hard; reddish brown (5YR 4/4); dry to moist.		
15.3	0.047	MW34-SB071220-349	B	338.0	GM		Silty GRAVEL; 70% fine gravel; 30% low plasticity silt; cemented in places; dense; light brownish gray (10YR 6/2); dry to moist.	340.0	Hydrated bentonite pellet backfill (330 to 350 ft bgs).
6.7	0.033			340	ML		Clayey SILT; 60% low plasticity silt; 40% clay; cohesive; very stiff; reddish brown (5YR 4/4); dry to moist.		
1.2	0.051			344.0	ML		Clayey SILT; 60% low plasticity silt; 40% clay; trace fine gravel; cohesive; hard; reddish brown (5YR 4/4); dry to moist.		
7.8	0.219			348.0	ML		Clayey SILT; 55% low plasticity silt; 45% clay; cohesive; hard; reddish brown (5YR 4/4); dry.		
0.3	0.264			350	ML		Boring ended at 350'		

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 12/17/20



555 17th Street, Suite 500  
 Denver, CO 80202  
 (303) 383-2300

# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL BORING/WELL NUMBER MW-13L  
 PROJECT NAME 700 S 1600 E PCE Plume DATE DRILLED 12/2/2020 - 12/3/2020  
 LOCATION Salt Lake City, UT CASING TYPE/DIAMETER 2-inch Schedule 40 PVC  
 DRILLING METHOD Sonic SCREEN TYPE/SLOT 2-inch Schedule 40 0.020-slot  
 SAMPLING METHOD Sonic Grab GRAVEL PACK TYPE #10/20 sand  
 GROUND ELEVATION (FT MSL) 4483.67 GROUT TYPE/QUANTITY Hydrated Bentonite Chips  
 TOP OF CASING (FT MSL) 4483.23 DEPTH TO WATER (FT BGS) 19.83  
 LOGGED BY Joe Miller GROUND WATER ELEVATION (FT MSL) 4463.84  
 REMARKS Groundwater measured while drilling

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							No recovery. Hand augered to 5 ft bgs.		
0	0.528			5	SM		Silty SAND: brown (10YR 5/4); 70% fine sand, poorly graded; 30% silt; loose; moist.	5.0	<p>Flush-mounted vault (10-inch).</p> <p>Hydrated bentonite chips (2 to 147 ft bgs).</p> <p>2-inch SCH 40 PVC blank.</p>
					ML		Sandy SILT: yellowish brown (10YR 5/4); 60% silt; 40% sand; soft; moist.	6.0	
0.1	0.371				CL		Sandy CLAY: mottled gray and light yellowish brown (2.5Y 6/3); 80% clay; 20% fine sand; stiff, cohesive; moist.	7.0	
0.1				10					
0.6	0.138				SM		Silty SAND: yellowish brown (10YR 5/4); 70% sand, poorly graded, fine to coarse; 30% silt; loose; wet.	12.0	
	0.182						SAND: yellowish brown (10YR 5/4); fine to coarse, poorly graded; loose; wet.	12.7	
0.6	0.135			15	SP				
0.4	0.254				GM		Silty GRAVEL with Sand: reddish brown (5YR 4/3); 60% gravel, fine to coarse, subangular to subrounded; 20% silt; 20% sand, fine to coarse; medium dense; cohesive in places; wet.	16.5	
0.1				20				20.0	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWN01.GDT 3/10/21

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-13L

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 12/2/2020 - 12/3/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.7	0.085				GM			21.5	<p>Hydrated bentonite chips (2 to 147 ft bgs).</p> <p>2-inch SCH 40 PVC blank.</p>
							Silty SAND: reddish brown (5YR 4/3); 60% sand, poorly graded, fine to coarse; 40% silt; cohesive; compact; wet.		
0.4	0.112				SM			25.0	
				25			At 24.5 feet bgs, trace gravel.		
					GM			28.0	
1.1	0.103						Silty GRAVEL with Sand: reddish brown (5YR 4/3); 70% gravel, fine to coarse; 20% silt; 10% sand; compact; cohesive; wet.		
					GM			30.0	
0.7	0.062				SW			30.0	
				30			SAND: reddish brown (5YR 4/3); 60% sand, well graded, fine to coarse, subangular to subrounded; 40% gravel, fine to coarse, loose; wet.		
							Silty GRAVEL with Sand: reddish brown (5YR 4/3); 50% gravel, fine to coarse, subangular to subrounded; 30% silt; 20% sand; compact; cohesive in places; wet.		
0.5	0.58							37.0	
								35	
							At 33.3 feet bgs, increase in sand content, decrease in silt content.		
							At 34.5 feet bgs, decrease in sand content, increase in silt content.		
0.6	0.123							37.0	
							Clayey SILT: reddish brown (7.5YR 5/4); 100% fines, low to medium plasticity; firm to stiff; cohesive; moist to wet.		
					ML			40.0	
0.4	0.998							40.0	
							At 39 feet bgs, trace sand, wet.		
								40	
							Sandy SILT: reddish brown (7.5YR 5/4); 80% silt, low plasticity; 20% sand; stiff; moist to wet.		
0.5	0.962				ML			40.0	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 3/10/21

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-13L

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 12/2/2020 - 12/3/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.4	0.335				ML		At 44 feet bgs, trace fine gravel.	43.0	<p>Hydrated bentonite chips (2 to 147 ft bgs).</p> <p>2-inch SCH 40 PVC blank.</p>
0.4	0.128			45	GM		Silty GRAVEL: reddish brown (5YR 5/4); 60% gravel, fine to coarse, subangular to subrounded; 30% silt; 10% sand, fine to coarse; cohesive in places; compact; wet.	45.0	
1	0.334						At 48 feet bgs, large clasts.		
1							At 49.5 feet bgs, less moisture.		
0.5	0.543			50	SP		SAND: brown (7.5YR 4/4); 90% sand, poorly graded, fine to coarse; 10% fine gravel; loose; wet.	50.0	
					GC		Clayey GRAVEL: brown (7.5YR 4/4); 70% coarse gravel; 30% clay; dense; moist.	52.0	
	0.351				SP		SAND with Gravel: light reddish brown (5YR 6/4); 85% fine sand, poorly graded; 15% fine gravel; loose; moist.	52.8	
2.1				55	GC		Clayey GRAVEL: brown (7.5YR 4/4); 70% gravel, fine to coarse; 30% clay; dense; moist to wet.	54.0	
0.6	0.478						At 57.5 feet bgs, increase in moisture.		
0.8	0.682				CL		CLAY: brown (7.5YR 4/4); low to medium plasticity clay; stiff; cohesive; dry to moist.	58.5	
0.8	0.262			60	ML		Clayey SILT: brown (7.5YR 5/4); low to medium plasticity; stiff; cohesive; moist.	60.0	
0.7							CLAY: brown (7.5YR 5/4); lean clay; very stiff; cohesive; cemented in places; dry to moist.	63.0	
	0.274			65	CL				

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWN01.GDT 3/10/21

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-13L

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 12/2/2020 - 12/3/2020

*Continued from Previous Page*

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.8	0.273				CL			66.0	<p>Hydrated bentonite chips (2 to 147 ft bgs).</p> <p>2-inch SCH 40 PVC blank.</p>
					SP		SAND with Gravel: light reddish brown (5YR 6/4); 85% sand, poorly graded, fine to coarse; 15% gravel, fine to coarse; dry.	67.0	
							Clayey SILT: brown (7.5YR 5/4); low to medium plasticity; firm to stiff; cohesive; moist.	68.0	
0.9	0.218			70					
1.2	0.38				ML				
							At 72 feet bgs, wet sandy lens.		
1	0.582							74.5	
				75			Clayey GRAVEL: brown (7.5YR 5/4); 70% gravel, fine to coarse, subrounded to rounded; 30% clay; dense; cohesive; moist.		
1.2	0.542				GC				
								79.0	
1.1	0.243				ML		Sandy SILT: brown (7.5YR 5/4); 60% silt; 40% sand; trace fine gravel; firm; cohesive; moist; wet in places.	80.0	
				80			Sandy SILT: light brown (7.5YR 6/4); 70% silt, low plasticity; 30% sand; firm; cohesive; moist.		
1.2	0.379								
1.3	0.515				ML				
				85					
1.2	0.507							87.0	
					ML		Clayey SILT: light brown (7.5YR 6/4); low to medium plasticity; 10% sand; firm; cohesive; moist.		

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 3/10/21





## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-13L

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 12/2/2020 - 12/3/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
1.8	0.092			-	CL			113.0	<p>Hydrated bentonite chips (2 to 147 ft bgs).</p> <p>2-inch SCH 40 PVC blank.</p>
				-	CL		CLAY with Sand: light olive brown (2.5Y 5/3) with brown mottling; 85% lean clay, low to medium plasticity; 15% sand; trace silt; laminated; firm to stiff; cohesive; moist.		
2.1				-	CL			116.5	
	0.082			-	CL		CLAY: light olive brown (2.5Y 5/3) with brown mottling; lean clay, low to medium plasticity; hard; cohesive; dry.		
1.7	0.126			-	CL				
1.2	0.171			-	CL				
				-	CL		At 122.25 feet bgs, increase in silt.		
1.5				-	SM			124.0	
	0.343			-	ML		Silty SAND: pale brown (10YR 6/3); 70% fine sand, poorly graded; 30% silt; loose; moist to wet. Sample is closer to wet than moist, but not saturated.	124.5	
				-	SM		Sandy SILT: light olive brown with brown mottling; low plasticity; moist to wet.	125.0	
1.5	0.508			-	SM		Silty SAND: pale brown (10YR 6/3); 70% fine sand, poorly graded; 30% silt; loose; moist to wet. Sample is closer to wet than moist, but not saturated.	126.0	
				-	ML		Sandy SILT: pale brown (10YR 6/3) with trace iron oxide staining in places; 70% silt, low plasticity; 30% sand; laminated; firm to stiff; cohesive; moist.		
1.3	0.141			-	ML				
				-	ML		At 130.3 feet bgs, increase in clay.		
1.8	0.118			-	ML			131.5	
	0.802			-	ML		Sandy SILT: brown (7.5YR 4/4); 70% silt; 30% sand; laminated; firm to stiff; cohesive; moist to wet.		

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 3/10/21

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-13L

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 12/2/2020 - 12/3/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
1.6				135	ML		Sandy SILT: brown (7.5YR 4/4); 60% silt; 30% sand; 10% fine gravel; moist to wet.	134.5	<p>Hydrated bentonite chips (2 to 147 ft bgs).</p> <p>2-inch SCH 40 PVC blank.</p> <p>#10/20 sand filter pack (147 to 160 ft bgs).</p> <p>2-inch SCH 40 PVC 0.020-slot screen (150 to 160 ft bgs).</p>
1.9	0.273				SM		Silty SAND: brown (7.5YR 4/4); 60% sand, fine to coarse; 30% silt; 10% fine gravel; dense; wet.	135.5	
							SILT with SAND: brown (7.5YR 4/4); 70% silt; 20% sand; 10% gravel; moist.	137.0	
1.6	0.446			140			At 140 feet bgs, less gravel.		
2.5					ML				
1.9				145					
1.8					ML		Gravelly SILT: brown (7.5YR 5/5); 60% silt; 40% gravel, fine to coarse; stiff; cohesive; moist to wet.	146.5	
							At 147.5 feet bgs, less stiff and wetter.	148.0	
2.9					ML		SILT with Gravel: brown (7.5YR 5/5); 85% silt; 15% gravel; stiff; cohesive; moist.	150.0	
2.1	0.265			150			Sandy SILT: brown (7.5YR 5/4); 60% silt, low plasticity; 40% sand, fine to coarse; trace fine gravel; firm; cohesive; moist to wet.		
					ML		At 152.5 feet bgs, increase in gravel.	153.0	
2.2	0.416						SILT with Sand: brown (7.5YR 5/5); 85% silt; 15% sand; firm to stiff; cohesive; moist to wet.	156.0	
2.4	0.612			155					
					GM		GRAVEL with Sand and Silt: brown (7.5YR 5/4); 50% gravel; poorly graded, fine to coarse, subangular to subrounded; 35% sand, fine to coarse; 15% silt; saturated; wet.	157.0	

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WHITNEY'S BORING LOG\_SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ\_LAEWNN01.GDT 3/10/21



555 17th Street, Suite 500  
 Denver, CO 80202  
 (303) 383-2300

# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-13L

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 12/2/2020 - 12/3/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
2.7	0.105			160	GM		At 158 feet bgs, decrease in silt.	160.0	
							End of boring at 160 feet bgs.		

WHITNEY'S BORING LOG\_SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ\_LAEVNN01.GDT 3/10/21



555 17th Street, Suite 500  
 Denver, CO 80202  
 (303) 383-2300

# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume  
 LOCATION Salt Lake City, UT  
 DRILLING METHOD Sonic  
 SAMPLING METHOD Sonic Grab  
 GROUND ELEVATION (FT MSL) 4722.89  
 TOP OF CASING (FT MSL) A: 4722.60 B: 4722.36  
 LOGGED BY Whitney Treadway  
 REMARKS Groundwater measured after installation.

BORING/WELL NUMBER MW-30R  
 DATE DRILLED 11/5/2020 - 11/10/2020  
 CASING TYPE/DIAMETER 2-inch Schedule 40 PVC  
 SCREEN TYPE/SLOT 2-inch Schedule 40 0.020-slot  
 GRAVEL PACK TYPE #10/20 sand  
 GROUT TYPE/QUANTITY Hydrated Bentonite Chips  
 DEPTH TO WATER (FT BGS) A: 227.57 B: 229.56  
 GROUND WATER ELEVATION (FT MSL) A: 4495.03 B: 4492.8

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							No recovery. Hydrovac to 9 ft bgs.		<p>Flush-mounted vault (10-inch).</p> <p>Pea gravel (2 to 8 ft bgs)</p> <p>Hydrated bentonite chips (8 to 237 ft bgs).</p> <p>2-inch SCH 40 PVC blank.</p>
0	0.009		B	10			Silty SAND: dark yellowish brown (10YR 4/6); 50% sand, well graded, fine to coarse, subangular to subrounded; 30% silt, non-plastic; 20% gravel and cobbles, well graded, fine to coarse, subrounded, maximum diameter is 4 inches; dry. At 10 feet bgs, cobbles are up to 6 inches.	9.0	
0							At 12 feet bgs, color changes to yellowish red (5YR 5/6).		
0					SM		At 13 feet bgs, color changes to brown (7.5YR 4/4).		
0	0.236		B	15			At 16 feet bgs, cobbles are up to 7 inches.		
0							At 18.5 feet bgs, color changes to brown (7.5YR 5/4); 45% sand, poorly graded, fine to coarse, mostly fine, subangular to subrounded; 40% silt, non-plastic; 15% gravel, poorly graded, fine to coarse, mostly fine, subrounded to subangular, maximum diameter is 4	18.5	
				20	SM			20.0	

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WHITNEY'S BORING LOG\_SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWN01.GDT 3/10/21

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30R

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/5/2020 - 11/10/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0	0.08				CH		inches; moist.	20.3	<p>Hydrated bentonite chips (8 to 237 ft bgs).</p>
0					SC		CLAY: light brown (7.5YR 6/4); high plasticity clay with dark red and light green stained nodules.	22.0	
					SM		Clayey SAND with Gravel: brown (7.5YR 4/4); 55% sand, poorly graded, fine to coarse, mostly fine to medium, subangular to subrounded; 30% high plasticity clay; 15% gravel, poorly graded, fine to coarse, mostly fine; moist.	23.0	
0					CH		Silty SAND: brown (7.5YR 4/4); 85% sand, poorly graded, fine, subangular to subrounded; 15% silt, non-plastic; moist.	24.0	
					GC		Gravelly CLAY: brown (7.5YR 5/4); 60% high plasticity clay; 40% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 5 inches; moist.	26.0	
0	0.122		B	25	GC		Clayey GRAVEL with Sand: brown (7.5YR 5/4); 50% gravel, well graded, fine to coarse, subangular to subrounded; 30% sand, well graded, fine to coarse, subangular to subrounded; 20% high plasticity clay with light green staining. Gradual transition from gravelly clay above.		
0					SC SM		Silty Clayey SAND: brown (7.5YR 4/4); 60% sand, poorly graded, fine to coarse, mostly fine, subangular to subrounded; 20% clay, medium to high plasticity (in nodules and layers); 20% silt, non-plastic; trace fine gravel; moist.	30.0	
0	0.069						Silty SAND with Gravel: brown (7.5YR 4/4); 60% sand, well graded, fine to coarse, subangular to subrounded; 20% silt, non-plastic; 20% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; moist.		
0					SM		At 32 feet bgs, sandy gravelly CLAY lens; 32 to 33 feet bgs.		
0	0.065		B	35					
0					CH		Gravelly CLAY: reddish brown (5YR 4/4); 70% high plasticity clay; 40% gravel, well graded, fine to coarse, subangular to subrounded; moist.	36.0	
0					SM		Silty SAND with Gravel: brown (7.5Y 5/4); 40% sand, well graded, fine to coarse; 20% silt, non-plastic; 20% gravel, well graded; 10% clay.	38.0	
0					SM		Silty SAND with Gravel: light brownish gray (2.5Y 6/2); 60% sand, poorly graded, mostly fine, angular to subangular; 30% silt, non-plastic; 10% gravel, poorly graded, mostly fine, angular to subangular; dry. Crushed rock.	39.0	
0	0				GC		Clayey GRAVEL: brown (7.5YR 4/3); 70% gravel, well graded, fine to coarse, angular to subangular, maximum diameter is 4 inches; 30% medium plasticity clay matrix; moist.	40.0	
0.7			B				At 42 feet bgs, large tan to light gray boulder, approximately 1 foot in diameter.		

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 3/10/21



555 17th Street, Suite 500  
 Denver, CO 80202  
 (303) 383-2300

# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30R

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/5/2020 - 11/10/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM	
0.7					GC			43.0		
0.5	0			45	SM		Silty SAND with Gravel: light brownish gray (2.5Y 6/2); 40% sand, well graded, fine to coarse, angular to subrounded; 30% gravel, well graded, fine to coarse, angular to subrounded, maximum diameter is 5 inches; 30% silt, non-plastic; moist.	44.5		
0.3					SC		Clayey SAND with Gravel: red boulders, gravel, and sand with clay matrix. Maximum diameter is 6 inches.	47.0		
0.2					SM		Silty SAND with Gravel: light brownish gray (2.5Y 6/2); 40% sand, well graded, fine to coarse, angular to subrounded; 30% gravel, well graded, fine to coarse, angular to subrounded, maximum diameter is 5 inches; 30% silt, non-plastic; moist.	48.0		
0.098				50	CH		CLAY: light brown (7.5YR 6/3); 95% high plasticity clay, slightly mottled; 5% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 4 inches.	50.0		
0.7					CH		At 52 feet bgs, small, olive silt nodules.			← Hydrated bentonite chips (8 to 237 ft bgs).
0.4					CH		At 53.5 feet bgs, clay is mottled with red.			
0.2	0.029			55	SC		Clayey SAND with Gravel: brown (7.5YR 5/4); 40% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel, well graded, fine to coarse, angular to subangular, maximum diameter is 4 inches; 15% medium plasticity clay; 10% silt, non-plastic; moist.	54.5		← 2-inch SCH 40 PVC blank.
0.2					SP		SAND with Gravel: brown (7.5YR 4/4); 60% sand, poorly graded, fine to coarse, mostly fine to medium; 40% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; trace silt; moist.	55.0		
0.1					SP		At 58 feet bgs, trace clay.			
0.048				60	SM		At 60 feet bgs, light gray pulverized rock; limestone.	60.0		
0					SM		Silty SAND with Gravel: brown (7.5YR 5/4); 50% sand, poorly graded, fine to coarse, mostly fine, subangular to subrounded; 30% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 5 inches; 20% silt, non-plastic; moist.			
0					SM		At 63 feet bgs, lithified fragment with clay.			
0	0.02			65						

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWN01.GDT 3/10/21

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30R

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/5/2020 - 11/10/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0					SM		At 66 feet bgs, clay content increases to 15%, silt content decreases to 5%.	66.0	
					SM		At 68 feet bgs, 8 inches cobble.	69.0	
0.058				70	CH		Sandy CLAY: brown (7.5YR 4/4); 75% high plasticity clay; 20% sand, poorly graded, fine; 5% gravel, well graded; small nodules of red sand in clay. Mostly lithified. At 70 feet bgs, white to light gray crushed rock; gray limestone.	70.5	
0					GC		Clayey GRAVEL with Sand: brown (7.5YR 4/4); 40% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 7 inches; 30% medium plasticity clay; 30% sand, poorly graded, fine to medium, subangular to subrounded; moist.		
0				75	SM		Silty SAND with Gravel: brown (7.5YR 4/4); 45% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 4 inches; 20% silt, non-plastic; moist.	75.0	
0	0.016				SM		At 79 feet bgs, cobble of crystalline rock.		
0				80	SM		Silty Clayey SAND with Gravel: brown (7.5YR 4/4); 55% sand, well graded, fine to coarse, subangular to subrounded; 30% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; 15% clay and silt (varies by depth), low plasticity; moist.	80.0	
0					SC SM				
0	0.056			85	SM				
0					SM				

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WHITNEY'S BORING LOG\_SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ\_LAEWNN01.GDT 3/10/21



## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30R

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/5/2020 - 11/10/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0	0.069			90	SC SM		Silty Clayey SAND with Gravel: brown (7.5YR 4/4); 55% sand, well graded, fine to coarse, subangular to subrounded; 30% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; 15% clay and silt (varies by depth), low plasticity; moist.	89.0	<p>Hydrated bentonite chips (8 to 237 ft bgs).</p> <p>2-inch SCH 40 PVC blank.</p>
0					CH		Gravelly CLAY: brown (7.5YR 4/4); 60% high plasticity clay; 25% gravel, well graded, fine to coarse, subangular to subrounded; 15% sand, poorly graded, fine to medium, subangular to subrounded; moist. Lenses of light yellow sand.	91.0	
0					GC		Clayey GRAVEL: reddish brown (5YR 4/4); 60% gravel, well graded, fine to coarse, subangular to subrounded; 20% medium plasticity clay; 20% sand, poorly graded, mostly fine to medium, subangular to subrounded; moist.	92.5	
0	0.074			95	SM		Silty SAND with Gravel: reddish brown (5YR 5/3); 50% sand, poorly graded, fine to coarse, mostly fine to medium; 30% gravel, well graded, fine to coarse, subangular to subrounded; 20% silt, non-plastic; moist. Some large, 6-inch cobbles.	94.0	
0					SM		Silty SAND: brown (7.5YR 4/4); 60% sand, poorly graded, fine to medium; 30% silt, non-plastic; 10% gravel, poorly graded, fine, subrounded; moist.	99.0	
0	0.013			100	GC		Clayey Silty GRAVEL with Sand: yellowish red (5YR 5/6); 50% gravel and cobbles, poorly graded, mostly coarse, maximum diameter is 7 inches, subangular to subrounded; 30% sand, poorly graded, mostly fine to medium, subangular to subrounded; 20% silt and clay, low plasticity; moist.  At 102 feet bgs, broken, light pink boulder.	100.0	
0					GC			103.5	
0	0.052			105	SC SM		Clayey Silty SAND with Gravel: yellowish red (5YR 5/6); 50% sand, well graded, fine to coarse, subangular to subrounded; 30% gravel, poorly graded, mostly fine; 10% silt and clay, low plasticity; moist.	110.0	
0					SC SM			110.0	
0	0.012			110	GC		Clayey GRAVEL with Sand: reddish brown (5YR 4/4); 45% gravel and cobbles, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; 35% sand, well graded, fine to coarse, subangular to subrounded; 20%	111.0	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 3/10/21



555 17th Street, Suite 500  
 Denver, CO 80202  
 (303) 383-2300

# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30R

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/5/2020 - 11/10/2020

*Continued from Previous Page*

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0	0.03		U	115	GC		<p>medium plasticity clay with some non-plastic silt; moist. Samples look like clay matrix around gravel that was more lithified before it was drilled.</p> <p>At 114 feet bgs, largest cobbles.</p>	117.0	
0	0.041		U	120			<p>Clayey SAND with Gravel: reddish brown (5YR 4/4); 45% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel and cobbles, well graded, fine to coarse, subangular to subrounded, maximum diameter is 7 inches; 20% medium plasticity clay with some non-plastic silt; moist. Gradual transition from above. Similar to sample above, looks like clay matrix around sand and gravel that was once more lithified.</p> <p>More clay from 120 to 122 feet bgs.</p>		
0	0.158		U	125	SC				
0	0.052		U	130			<p>More clay from 130 to 131 feet bgs.</p> <p>At 133 feet bgs, 6-inch lens of reddish yellow (5YR 7/8) medium sand.</p>		

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WHITNEY'S BORING LOG\_SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ\_LAEWNN01.GDT 3/10/21

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30R

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/5/2020 - 11/10/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0	0.035		U	135	GC		Clayey GRAVEL with Sand: reddish brown (5YR 4/4); 40% gravel and cobbles, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; 30% sand, well graded, fine to coarse, subangular to subrounded; 30% medium to high plasticity clay matrix around sand and gravel; moist.	135.0	<p>Hydrated bentonite chips (8 to 237 ft bgs).</p> <p>2-inch SCH 40 PVC blank.</p>
0							Clayey SAND with Gravel: reddish brown (5YR 4/4); 50% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel and cobbles, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; 15% medium plasticity clay matrix with non-plastic silt; moist.	137.0	
0	0.076		U	140	SC		Clayey SAND with Gravel: reddish brown (5YR 4/4); 60% sand, poorly graded, fine to coarse, mostly fine to medium, subangular to subrounded; 20% medium plasticity clay matrix; 20% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 3 inches; moist.	142.0	
0							Sand becomes well graded, fine to coarse.	145.0	
0	0.078		U	145	SC		Silty SAND with Gravel: brown (7.5YR 4/4); 60% sand, poorly graded, fine to coarse, mostly fine; 20% silt, non-plastic; 20% gravel, well graded, fine to coarse; trace clay; moist.	147.5	
0							SAND with Gravel and Clay: reddish brown (5YR 4/4); 50% sand, well graded, fine to coarse, subangular to subrounded; 40% gravel, well graded, fine to coarse, maximum diameter is 7 inches; 10% medium plasticity clay; moist.	150.0	
0	0.049		U	150	SW SC		At 153 feet bgs, lighter 6-inch layer with silt (not clay); brown (5YR 6/4).	155.0	
0	0.122		U	155				157.0	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 3/10/21

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30R

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/5/2020 - 11/10/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0					GC		Clayey GRAVEL with Sand: reddish brown (5YR 4/4); 50% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 7 inches; 35% sand, well graded, fine to coarse, subangular to subrounded; 15% low to medium plasticity clay matrix; moist.	159.0	<p>Hydrated bentonite chips (8 to 237 ft bgs).</p> <p>2-inch SCH 40 PVC blank.</p>
0				160	SC SM		Clayey Silty SAND with Gravel: reddish brown (5YR 4/4); 55% sand, well graded, fine to coarse, mostly fine, subangular to subrounded; 25% clay and silt intermixed; 20% gravel, poorly graded, fine to coarse, mostly fine, subangular to subrounded, maximum diameter is 4 inches; moist.	164.0	
0	0.099			165	CH		Gravelly CLAY: reddish brown (5YR 4/4); 75% medium plasticity clay; 25% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 4 inches; moist; slightly lithified.	166.0	
0					ML		Gravelly SILT: reddish brown (5YR 4/4); 75% silt, non-plastic; 25% gravel, poorly graded, coarse, subangular to subrounded, maximum diameter is 4 inches; moist; lithified.	166.5	
0					SM		Large, white to light pink cobble/boulder, cut by core barrel, including silt and fine sand from cutting and grinding.	167.5	
0					SC		Silty SAND with Gravel: reddish brown (5YR 4/4); 40% sand, poorly graded, fine to coarse, mostly fine, subangular to subrounded; 30% gravel, well graded, fine to coarse, subangular to subrounded; 30% silt; moist.	168.5	
0				170	SC		Clayey SAND and GRAVEL: reddish brown (5YR 4/4); 40% sand, poorly graded, fine to coarse, subangular to subrounded; 40% gravel, well graded, fine to coarse, subangular to subrounded; 20% low plasticity clay; moist; with lenses of light-colored, fine sand.	170.0	
0					SC		Clayey SAND with Gravel: reddish brown (5YR 4/4); 45% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; 20% medium plasticity clay; moist.	172.0	
0					GC		Clayey GRAVEL with Sand: reddish brown (5YR 4/4); 40% gravel, well graded, fine to coarse, subangular to subrounded; 30% medium plasticity clay; 30% sand, well graded, fine to coarse, subangular to subrounded; moist.	174.0	
2.5	0.067			175	SM		Silty SAND and GRAVEL: reddish brown (5YR 5/4); 40% sand, poorly graded, fine to coarse, mostly fine, subangular to subrounded; 40% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; 20% silt, non-plastic; moist. At 175 feet bgs, large pulverized cobbles, light gray powder with dark gray cobbles. At 176 feet bgs, 6-inch fine sand layer (trace coarse).	178.0	
1.1					SM		Silty SAND with Gravel: reddish brown (5YR 4/3); 40% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 5 inches; 25% clay and silt; moist. Most gravel and cobbles are of dark gray limestone.	180.0	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 3/10/21

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30R

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/5/2020 - 11/10/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
1.3	0.06				SM			183.0	<p>Hydrated bentonite chips (8 to 237 ft bgs).</p> <p>2-inch SCH 40 PVC blank.</p>
0.2	0.058			185	SM		Silty SAND with Gravel: brown (7.5YR 4/4); 65% sand, poorly graded, fine to coarse, mostly fine to medium, subangular to subrounded; 20% gravel, poorly graded, fine to coarse, mostly fine, subangular to subrounded, maximum diameter is 3 inches; 15% silt, slight plasticity; moist.	186.0	
0					ML		SILT with Gravel: brown (7.5YR 4/4); 85% silt, non-plastic; 15% gravel, poorly graded, mostly fine, subangular to subrounded; trace sand lenses; moist. Gradual transition to clay below.	187.5	
0					CH		CLAY with Sand and Gravel: brown (7.5YR 4/4); 80% medium to high plasticity clay; 10% fine gravel, subangular to subrounded; 10% fine to medium sand; moist. Transition to silty sand below is a thin silt layer.	188.5	
0	0.173			190	SM		Silty SAND: brown (7.5YR 4/4); 70% sand, poorly graded, mostly fine, subangular to subrounded; 20% silt, non-plastic; 10% gravel, well graded, fine to coarse, maximum diameter is 3 inches; moist.	190.0	
0					SM		Silty SAND with Gravel: brown (7.5YR 4/4); 45% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel and cobbles, well graded, fine to coarse, subangular to subrounded, maximum diameter is 7 inches; 20% silt, slightly plastic; moist.	194.0	
0	0.058			195	CH		CLAY with Sand and Gravel: brown (7.5YR 4/4); 70% medium to high plasticity clay; 15% gravel, poorly graded, fine, subangular to subrounded; 15% sand, well graded, fine to coarse, subangular to subrounded; moist.	195.0	
0					SM		Silty SAND with Gravel: brown (7.5YR 4/4); 45% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel, well graded, fine to coarse, subangular to subrounded; 20% silt, slightly plastic; moist.	197.0	
0					SC		Clayey SAND: brown (7.5YR 4/4); 45% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel, well graded, fine to coarse, subangular to subrounded; 20% clay; moist.	199.5	
0	0.068			200	SM		Silty Clayey SAND with Gravel: brown (7.5YR 4/4); 40% sand, well graded, fine to coarse, subangular to subrounded; 40% silt and clay; 20% gravel, well graded, fine to coarse, subangular to subrounded; moist.	200.0	
0					SM		Silty SAND with Gravel: brown (7.5YR 4/4); 45% sand, well graded, fine to coarse, subangular to subrounded; 35% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; 20% medium plasticity clay; moist.		

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## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30R

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/5/2020 - 11/10/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0					CL		CLAY: yellowish brown (10YR 5/4); 100% low to medium plasticity clay; trace coarse gravel and cobbles; moist. Clay is slightly mottled.	203.0	<p>Hydrated bentonite chips (8 to 237 ft bgs).</p> <p>2-inch SCH 40 PVC blank.</p>
0				205	SM		Silty SAND with Gravel: brown (7.5YR 5/4); 60% sand, poorly graded, fine to coarse, mostly fine, subangular to subrounded; 20% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 6 inches; 20% silt, non-plastic; moist.	204.5	
0					SC		Clayey SAND with Gravel: brown (7.5YR 4/4); 60% sand, well graded, fine to coarse, subangular to subrounded; 20% gravel, poorly graded, fine to coarse, mostly fine, subangular to subrounded, maximum diameter is 4 inches; 20% clay, medium plasticity clay; moist.	208.5	
0	0.016			210	SC		At 210 feet bgs, 3-inch clay layer.	210.5	
0					SM		Silty Clayey SAND with Gravel: brown (7.5YR 4/4); 65% sand, poorly graded, fine to coarse, mostly fine, subangular to subrounded; 20% clay and silt (alternating layers of none to medium plasticity); 15% gravel, poorly graded, fine to coarse, mostly fine, subangular to subrounded; moist.		
0	0.07			215	SC SM				
0							At 218 feet bgs, 3-inch clay later.		
0	0.188			220	SC SM		Silty Clayey SAND with Gravel: brown (7.5YR 4/3); 60% sand, well graded, fine to coarse, subangular to subrounded; 20% gravel, well graded, fine to coarse, subangular to subrounded; 20% clay and silt (varying degrees of plasticity); moist. Gradual transition to clayey sand below.	220.0	
0									
0	0.063			225	SC SM				

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 3/10/21

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30R

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/5/2020 - 11/10/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0					SC		Clayey SAND and GRAVEL: brown (7.5YR 4/3); 40% sand, well graded, fine to coarse, subangular to subrounded; 40% gravel, well graded, fine to coarse, subangular to subrounded; 20% clay; moist.	226.0	<p>Hydrated bentonite chips (8 to 237 ft bgs).</p> <p>#10/20 sand filter pack (237 to 252 ft bgs).</p> <p>2-inch SCH 40 PVC 0.020-slot screen nested well (240 to 250 ft bgs).</p>
0					CH		Sandy CLAY: brown (7.5YR 4/3); 60% medium to high plasticity clay; 30% sand, poorly graded, fine to medium, subangular to subrounded; 10% gravel, poorly graded, fine to coarse, mostly fine, subangular to subrounded; moist.	228.0	
0				230	CL		CLAY: brown (7.5YR 4/3); 100% low plasticity clay; trace sand and gravel; moist.	231.0	
0					CH		Gravelly CLAY: brown (7.5YR 5/4); 50% medium to high plasticity clay; 30% gravel, well graded, fine to coarse, subangular to subrounded; 20% sand, well graded, fine to coarse, subangular to subrounded; moist. At 233 feet bgs, large, 7-inch cobble. Gravel is coarse, including cobbles, with lenses of wet sand.	231.5	
0.018				235	SC		Clayey SAND with Gravel: yellowish brown (10YR 5/4); 40% sand, well graded, fine to coarse, subangular to subrounded; 30% gravel, well graded, fine to coarse, subangular to subrounded; 30% high plasticity clay; wet.	235.0	
0					GC		Clayey GRAVEL with Sand: yellowish brown (10YR 5/4); 60% gravel, poorly graded, fine to coarse, mostly fine, subangular to subrounded; 20% sand, poorly graded, coarse, subangular to subrounded; 20% high plasticity clay; wet.	240.0	
0				240	CH		Gravelly CLAY: yellowish brown (10YR 5/4); 50% high plasticity clay; 30% gravel, poorly graded, fine to coarse, mostly fine with some large cobbles, maximum diameter is 5 inches; 20% sand, poorly graded, coarse, subangular to subrounded; wet.	242.0	
0					SP SC		SAND with Clay and Gravel: yellowish brown (10YR 5/4); 70% sand, poorly graded, medium to coarse, subangular to subrounded; 20% gravel, poorly graded, mostly fine, subangular to subrounded; 10% medium plasticity clay; wet.	244.0	
0	0.008			245			From 246 to 246.5 feet bgs, more clay.	247.5	
0					ML		SILT: reddish brown (5YR 5/4); 100% silt, slightly mottled; trace coarse gravel and cobbles at lower contact.	248.3	

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WHITNEY'S BORING LOG\_SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWMN01.GDT 3/10/21

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30R

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/5/2020 - 11/10/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0			U	250	GC		Clayey GRAVEL: yellowish brown (10YR 5/4); 50% gravel, poorly graded, mostly fine, some coarse and cobbles; 30% sand, poorly graded, medium to coarse, subangular to subrounded; 20% high plasticity clay; wet.	250.0	<p>#10/20 sand filter pack (237 to 252 ft bgs).</p> <p>2-inch SCH 40 PVC blank.</p> <p>Hydrated bentonite chips (252 to 277 ft bgs).</p>
0					CH		CLAY: reddish brown (5YR 4/4); 95% medium to high plasticity clay; 5% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 3 inches; moist.		
0	0.062			255	SC SM		Silty Clayey SAND with Gravel: reddish brown (5YR 4/4); 40% sand, poorly graded, fine to medium, subangular to subrounded; 30% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 3 inches; 15% clay; 15% silt (in layers of differing plasticity); moist.	255.0	
0					CH		CLAY: reddish brown (5YR 4/4); 90% medium to high plasticity clay; 10% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 3 inches; moist.	259.0	
0	0.144			260	CL		Gravelly CLAY: reddish brown (5YR 4/3); 70% low plasticity clay; 30% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 3 inches; trace sand; moist.	260.0	
0					CH		CLAY: reddish brown (5YR 4/4); 100% high plasticity clay; trace sand and gravel; moist.	264.0	
0	0.111			265	CL		Gravelly CLAY: reddish brown (5YR 4/4); 70% low plasticity clay; 30% gravel, poorly graded, mostly fine, maximum diameter is 2 inches; moist.	265.0	
0					GM		Silty GRAVEL with Sand: reddish brown (5YR 5/4); 45% gravel, poorly graded, mostly fine; 35% sand, poorly graded, mostly fine; 20% silt; moist. Lithified fragments.	268.0	
0					CL		Gravelly CLAY: reddish brown (5YR 4/4); 60% low to medium plasticity clay; 40% gravel, well graded, fine to coarse, maximum diameter is 4 inches; moist.	269.0	
0	0.08			270	CL		At 270 feet bgs, clay content increases to 70%, gravel content decreases to 30%.	271.0	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 3/10/21



PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30R

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/5/2020 - 11/10/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0				-	CL			273.0	<p>Hydrated bentonite chips (252 to 277 ft bgs).</p> <p>#10/20 sand filter pack (277 to 291 ft bgs).</p> <p>2-inch SCH 40 PVC 0.020-slot screen nested well (280 to 290 ft bgs).</p> <p>Native soil sluff (291 to 295 ft bgs).</p>
0	0.018		U	-	GC		Clayey GRAVEL with Sand: reddish brown (5YR 4/4); 40% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 3 inches; 30% sand, well graded, fine to coarse, subangular to subrounded; 30% low plasticity clay; moist. Lithified fragments.	275.0	
0				-	SC		Clayey SAND: reddish brown (5YR 4/4); 60% sand, poorly graded, coarse, subangular to subrounded; 40% high plasticity clay; wet.	278.0	
0	0.175			-	GC		At 280 feet bgs, some gravel.	281.0	
0			U	-	GC		Clayey GRAVEL: reddish brown (5YR 4/4); 60% gravel, well graded, fine to coarse, subangular to subrounded, maximum diameter is 3 inches; 40% low to medium plasticity clay; moist.	284.0	
0	0.184			-	GC		Clayey GRAVEL: reddish brown (5YR 4/4); 45% gravel, poorly graded, fine to coarse, mostly fine, some cobbles; 35% sand, well graded, fine to coarse, subangular to subrounded; 20% low to medium plasticity clay; moist.	285.0	
0				-	SM		Silty SAND with Gravel: very pale brown (10YR 7/3); 40% sand, poorly graded, mostly fine, subangular to subrounded; 30% gravel, poorly graded, mostly fine, some coarse and cobbles; 30% silt, non-plastic; moist. Possibly crushed rock.	286.0	
0				-	CL		Thin, reddish yellow (5YR 6/6) sand lens at 288 feet bgs, then Gravelly CLAY: reddish brown (5YR 4/4); 70% low to medium plasticity clay; 30% gravel, well graded, fine to coarse, subangular to subrounded; moist.	288.0	
0	0.16		U	-	SC		Clayey SAND with Gravel: reddish brown (5YR 4/4); 40% sand, well graded, fine to coarse, subangular to subrounded; 40% medium plasticity clay; 20% gravel, poorly graded, mostly fine, subangular to subrounded; wet.	290.0	
0				-	CL		Gravelly CLAY: reddish brown (5YR 4/4); 60% low to medium plasticity clay; 30% gravel, well graded, fine to coarse; 10% sand, poorly graded, coarse; moist.	292.5	

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WHITNEY'S BORING LOG\_SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 3/10/21



555 17th Street, Suite 500  
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# BORING/WELL CONSTRUCTION LOG



PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-30R

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/5/2020 - 11/10/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
	0.064		□	295			End of boring at 295 feet bgs.	295.0	

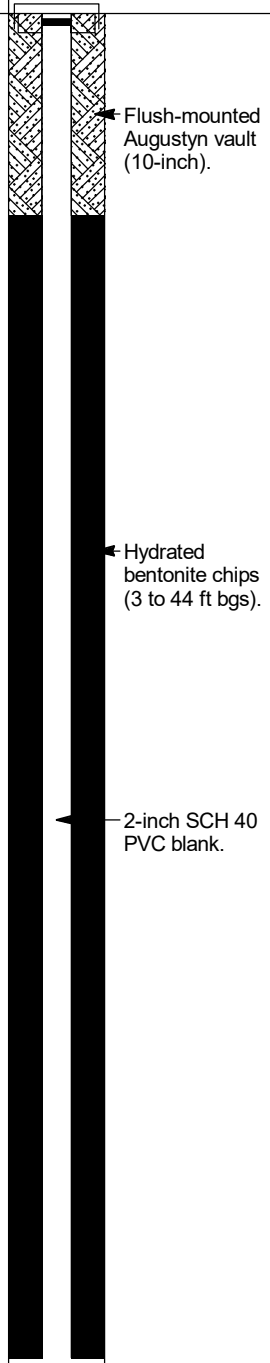


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 Denver, CO 80202  
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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL BORING/WELL NUMBER MW-36  
 PROJECT NAME 700 S 1600 E PCE Plume DATE DRILLED 11/17/2020  
 LOCATION Salt Lake City, UT CASING TYPE/DIAMETER 2-inch Schedule 40 PVC  
 DRILLING METHOD Sonic SCREEN TYPE/SLOT 2-inch Schedule 40 0.020-slot  
 SAMPLING METHOD Sonic Grab GRAVEL PACK TYPE #10/20 sand  
 GROUND ELEVATION (FT MSL) 4429.01 GROUT TYPE/QUANTITY Hydrated Bentonite Chips  
 TOP OF CASING (FT MSL) 4428.49 DEPTH TO WATER (FT BGS) 44.72  
 LOGGED BY Joe Miller GROUND WATER ELEVATION (FT MSL) 4384.29  
 REMARKS Groundwater measured while drilling

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							Hydrovac to 6 ft bgs.		
				5					
								6.0	
	0.519				ML		SILT: light yellowish brown (10YR 5/6); 60% silt; 30% clay; 10% fine sand; cohesive; moist to wet.		
	0.6		B					8.0	
	1.1	0.185			SP		SAND: yellowish brown (10YR 5/6); 100% sand, poorly graded, fine to medium; loose; moist.		
				10					
	0.5	0.369			SM		Silty SAND: brown (10YR 4/3); 80% sand; 20% silt; cohesive; firm; moist to wet.		
				11.0				12.5	
	1.7	0.158			SP		SAND: brown (10YR 4/3); 100% sand, poorly graded, fine; loose; moist.		
				14.5					
	0.7	0.117			SM		Silty SAND: light yellowish brown (2.5Y 6/4); 80% sand; 20% silt; cohesive; firm; moist to wet.		
			B	15				15.0	
							SAND: brown (10YR 4/3); 100% sand, poorly graded, fine; loose; moist.		
	0.6	0.061			SP				
							At 18 feet bgs, silty layer; moist to wet.		
	1.6	0.098							
							At 19.5 feet bgs, silty layer; moist to wet; light yellowish brown		
				20				20.0	



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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWN01.GDT 3/10/21



555 17th Street, Suite 500  
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 (303) 383-2300

# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-36

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/17/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
5.7	0.438				SP		(2.5Y light yellowish brown). SAND: brown (10YR 4/3); 100% sand, poorly graded, fine; loose; moist.		<p>Hydrated bentonite chips (3 to 44 ft bgs).</p> <p>2-inch SCH 40 PVC blank.</p>
2.2	0.442		B	25	SM		Silty SAND: yellowish brown (10YR 5/4); 80% sand; 20% silt; cohesive; firm; moist to wet. SAND: yellowish brown (10YR 5/4); 100% sand, poorly graded, fine; loose; moist.	24.5 25.0	
1.7	0.121				SP				
1.9	0.251						At 28.5 feet bgs, silty layer; moist to wet.		
7.5	0.348				SM		Silty SAND: 70% sand; 30% silt; cohesive in places; loose to firm; moist to wet. NOTE: sample slid out of core barrel. Depth to water at time of drilling: 30.82 feet bgs.	30.0	
0	0.127				SM		Silty SAND: 60% sand; 40% silt; laminated; loose; saturated wet. NOTE: most of sample lost.	32.0	
0.4	0.631		B	35	ML		SILT with SAND: dark grayish brown (2.5Y 4/2); 80% silt; 20% sand; laminated; soft to firm; wet but not saturated.	35.0	
0.1	0.558						No recovery; shoe sample was muck.	38.0	
0	0.935		B	40	ML		Sandy SILT: dark grayish brown (2.5Y 4/2); 80% silt; 40% sand; cohesive; moist to wet. At 42 feet bgs, color changes to brown (7.5YR 4/2).	40.0	

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WHITNEY'S BORING LOG\_SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWN01.GDT 3/10/21

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-36

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/17/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.7	0.435				ML		At 43 feet bgs, wetter zone.	43.0	<p>#10/20 sand filter pack (44 to 54 ft bgs).</p> <p>2-inch SCH 40 PVC 0.020-slot screen nested well (47 to 52 ft bgs).</p> <p>Hydrated bentonite chips (54 to 105 ft bgs).</p>
0.3	0.432			45			At 44.5 feet bgs, wetter zone, increased sand. Silty SAND: 70% sand; 30% silt; some iron oxide staining; cohesive; loose.	45.0	
0.6	0.17				SM			49.0	
0.4	0.36				SP		SAND: brown (7.5YR 5/2); fine to coarse sand; trace fine gravel; loose; saturated wet.	49.8	
				50	SM		Silty SAND: 70% sand; 30% silt; some iron oxide staining; cohesive; loose.	50.0	
0.5	0.158				GP		GRAVEL with Sand and Silt: brown (7.5YR 5/2); 70% gravel, poorly graded, fine to coarse, subangular to rounded; 20% sand, coarse; 10% silt; wet.	52.2	
0.4							SILT: very dark gray (7.5YR 3/1); laminated; trace iron oxide staining; trace clay; trace fine gravel; stiff; moist, decreasing moisture with depth.		
	0.663			55	ML		At 56 ft bgs, dry to moist.		
0.8	0.68								
1.2	0.765			60			SILT: black (10YR 2/1); clayey silt; trace fine to coarse gravel; cohesive; very stiff; dry.	60.0	
0.8	1.07				ML		At 62 feet bgs, color changes to dark gray (7.5YR 4/1); firm to stiff; trace fine gravel; moist.		
0.3	0.876								
0.5	0.555			65			CLAY: brown (7YR 5/4); 50% clay; 40% silt; 10% gravel, fine to coarse, subangular to surrounded; dry to moist.	65.0	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWN01.GDT 3/10/21

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-36

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/17/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.7	0.48		B	-	CL		CLAY: brown (7YR 5/4); 50% clay; 40% silt; 10% gravel, fine to coarse, subangular to surrounded; dry to moist.	68.0	
				-	ML		SILT: trace fine gravel; cohesive; stiff; moist.	69.0	
0.8	0.12		B	-	GC		Clayey GRAVEL: brown (7.5YR 5/4); 60% gravel, fine to coarse; 40% clay; moist.	70.0	
				70			SILT: brown (7.5YR 5/4); 80% silt; 15% clay; 5% fine gravel; cohesive; very stiff; moist.		
1	0.572		B	-					
0.4	0.58			-	ML				
0.6	0.286		B	75					
				-	ML		Gravelly SILT: brown (7.5YR 5/4); 60% silt; 40% gravel; moist.	76.0 76.5	
1.6	0.421		B	-	ML		SILT: brown (7.5YR 5/4); trace gravel; cohesive; stiff; laminated; dry to moist.	78.0	
				-	ML		Gravelly SILT: brown (7.5YR 5/4); 70% silt; 30% fine gravel; cohesive; stiff; moist.	79.0	
1.4	0.348		B	80	GM		Silty GRAVEL: light yellowish brown (2.5Y 6/3); 60% gravel, fine to coarse, angular to subangular; 30% silt; 10% sand; cohesive; medium dense; moist to wet. At 80 feet bgs, color changes to light yellowish brown (10YR 6/4).		
0.9	0.54			-					
0.6	0.45		B	-	GM		Silty GRAVEL: light yellowish brown (10YR 6/4); 60% gravel, fine to coarse, angular to subrounded; 40% silt; cohesive; dense; moist.	82.0	
				-					
4.6	0.129		B	85	SM		Silty SAND: light yellowish brown (10YR 6/4); 60% sand, fine to coarse; 30% silt; 10% fine gravel; loose to medium dense; moist to wet.	85.0	
6.7	0.103			-	GM		Silty GRAVEL: light yellowish brown (10YR 6/4); 60% gravel, fine to coarse, subangular to subrounded, cobbles up to 4 inches in diameter; 40% silt; cohesive; dense; moist; socketed matrix.		

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWMN01.GDT 3/10/21

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-36

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/17/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
7	0.237		B	90			Silty GRAVEL: light yellowish brown (10YR 6/4); 60% gravel, fine to coarse, subangular to subrounded, cobbles up to 4 inches in diameter; 40% silt; cohesive; dense; moist; socketed matrix. At 90 feet bgs, moist to wet.	89.0	
3.1	0.176							At 91 feet bgs, moist to wet sandy lens.	
1.8	0.073				GM	At 92.5 feet bgs, wet, sandy lens.			
1.8	0.11		B	95		At 95 feet bgs, 5-inch cobble.			
2.2	0.057					At 96 feet bgs, wet, sandy lens.			
4	0.119				CL	CLAY: pale olive (5Y 6/3); iron oxide staining in places; laminated; very stiff; dry to moist.	98.5		
0.4	0.785			100		SILT: dary gray (5Y 4/1); clayey silt; laminated; cohesive; very stiff; moist; possibly lake bed sediments.	100.0		
0.8	1.4								
0.7	2.34		B	105	ML				
0.7	2.89								
1.1	2.25			110		End of boring at 110 feet bgs.	110.0		

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWN01.GDT 3/10/21



555 17th Street, Suite 500  
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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume  
 LOCATION Salt Lake City, UT  
 DRILLING METHOD Sonic  
 SAMPLING METHOD Sonic Grab  
 GROUND ELEVATION (FT MSL) 4348.36  
 TOP OF CASING (FT MSL) S: 4348.00 D: 4347.97  
 LOGGED BY Joe Miller and Whitney Treadway  
 REMARKS Groundwater measured after installation.

BORING/WELL NUMBER MW-37  
 DATE DRILLED 11/12/2020-11/13/2020  
 CASING TYPE/DIAMETER 2-inch Schedule 40 PVC  
 SCREEN TYPE/SLOT 2-inch Schedule 40 0.020-slot  
 GRAVEL PACK TYPE #10/20 sand  
 GROUT TYPE/QUANTITY Hydrated Bentonite Chips  
 DEPTH TO WATER (FT BGS) S: 18.45 D: 42.28 BTOC  
 GROUND WATER ELEVATION (FT MSL) S: 4329.55 D: 4305.69

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							Hydrovac to 7 ft bgs.		
1.7	0.135							7.0	
1.6	0.089		B		CL		CLAY with Gravel: light olive brown (2.5Y 5/3) with red iron oxide staining; 90% low to medium plasticity clay; 10% gravel, poorly graded, mostly fine, subangular to subrounded; moist.		Flush-mounted vault (10-inch).
1.5	0.01								
				10	ML		SILT: light olive brown (2.5Y 5/3) with red iron oxide staining; 100% silt with none to low plasticity; moist.	10.0	
0.4	0.157						At 11 feet bgs, 3-inch medium sand layer, dark reddish brown (5YR 3/4); wet.	11.3	
					CH		Sandy CLAY: dark brown (7.5YR 3/4); 70% medium to high plasticity; 30% sand, poorly graded, fine, subangular to subrounded; wet.		Hydrated bentonite chips (3 to 7 ft bgs).
0.4	0.135								
			B	15	CH		CLAY: dark brown (7.5YR 3/4); 100% high plasticity clay; moist.	14.5	
0.4	0.168								
0.5	0.067				SC		Sandy CLAY/Clayey SAND: dark brown (7.5YR 3/4); moist.	17.5	
					SP		SAND: medium to coarse sand and fine gravel; wet. 4-inch layer.	18.5	
0.6	0.037				SC		Sandy CLAY/Clayey SAND: dark brown (7.5YR 3/4); moist.	18.8	
				20				20.0	

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWN01.GDT 3/10/21

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## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume

BORING/WELL NUMBER MW-37  
 DATE DRILLED 11/12/2020-11/13/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0	0.095	Attempted bailer sample; no water.					CLAY: yellowish brown (5YR 4/6); 100% high plasticity clay; wet. NOTE: recovery was not in-situ.		
0.4	0.103				CH				
0.5	0.063		B	25					
0.5	0.1							27.5	
0.6	0.042				SC		Clayey SAND: yellowish red (5YR 4/6); 70% sand, poorly graded, fine to medium subangular to subrounded; 30% high plasticity clay; wet. NOTE: recovery was not in-situ, depth may not be exact.		
0.1	0.087	MW37-GW111220-30		30			CLAY with SAND: yellowish red (5YR 4/6); high plasticity clay with orange and black staining; sand content varies, mostly fine to medium; moist. At 31 feet bgs, thin, wet, fine sand lense with red/orange and black staining.	30.0	
0.3	0.172				CH		At 32.5 feet bgs, thin, wet, fine sand lense with red/orange and black staining. At 33 feet bgs, thin, wet, fine sand lense with red/orange and black staining. At 34 feet bgs, thin, wet, fine sand lense with red/orange and black staining.	34.5	
0.4	0.062		B	35	CH		CLAY: yellowish red (5YR 4/6) mottled with light greenish gray; hard clay; moist.	35.8	
0.4	0.276				CH		Sandy CLAY: yellowish red (5YR 4/6); 50% high plasticity clay with orange and black staining; 30% sand, well graded, fine to coarse, subangular to subrounded; 20% gravel, poorly graded, fine; wet. At 36.5 feet bgs, thin, wet, fine sand lense with red/orange and black staining, then CLAY with SAND: yellowish red (5YR 4/6); high plasticity clay with orange and black staining; sand content varies, mostly fine to medium; moist. At 38.5 feet bgs, thin, wet, fine sand lense with red/orange and black staining.	36.5	
0.5	0.202				CH			40.5	
0.7	0.153		B	40			At 40 feet bgs, thin, wet, fine sand lense with red/orange and black staining. Sandy CLAY: yellowish red (5YR 4/6); high plasticity clay; sand content varies; moist.		
					CH		At 42 feet bgs, thin, wet, fine sand lense with red/orange and black staining.		

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWN01.GDT 3/10/21

## BORING/WELL CONSTRUCTION LOG


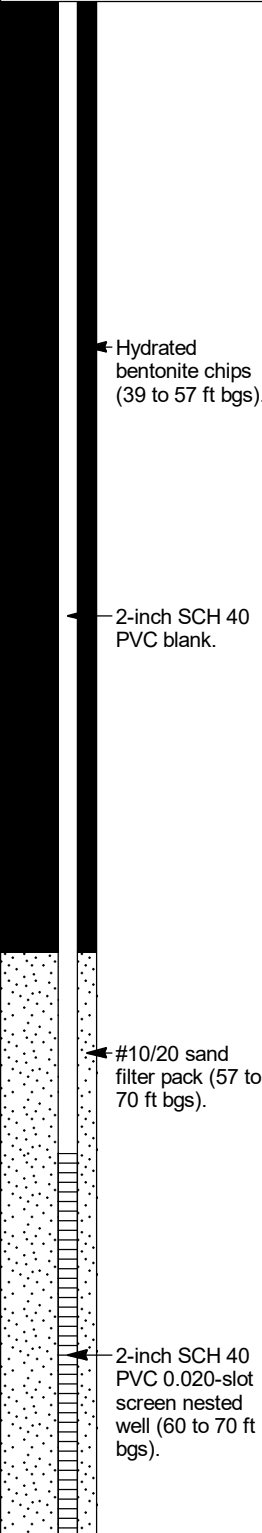




PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-37

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/12/2020-11/13/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
1	0.124			-			At 43 feet bgs, large cobble.	43.5	 <p>Hydrated bentonite chips (39 to 57 ft bgs).</p> <p>2-inch SCH 40 PVC blank.</p> <p>#10/20 sand filter pack (57 to 70 ft bgs).</p> <p>2-inch SCH 40 PVC 0.020-slot screen nested well (60 to 70 ft bgs).</p>
				-	CH		Sandy CLAY with Gravel: yellowish red (5YR 4/6); 50% high plasticity clay; 30% sand, well graded; 20% fine gravel; wet.	44.3	
	0.43			45			CLAY: mottled dark reddish brown (5YR 3/4) and pale brown (10YR 6/3); 100% high plasticity clay; hard; moist.		
1.2	0.205			-	CH		At 46 feet bgs, color changes to mottled light olive gray (5Y 6/2) and yellowish brown (10YR 4/6) (possible staining); softer than above.		
1.3	0.143			-			No recover from 50 to 60 feet bgs due to rock in drill bit.	50.0	
				55			At 54 feet bgs approximate contact per driller.		
1.2	0.217			-	CH		CLAY: mottled dark reddish brown (5YR 3/4) with dark yellowish brown (10YR 4/4); 85% high plasticity clay, firm to stiff; 10% fine sand; 5% silt; cohesive in places; moist to wet. Mixed recovery. NOTE: likely soft material pushed down from above.	60.0	
1.9	0.237			-					
2	0.351			65	CH		CLAY with Gravel: 70% medium to high plasticity clay; 30% gravel, fine to coarse, angular to subrounded; cohesive in place; wet. Mixed Recovery.	64.5	

WHITNEY'S BORING LOG\_SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWN01.GDT 3/10/21

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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-37

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/12/2020-11/13/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
2.3	0.458	MW37-GW111320-70	U		CH		CLAY with Gravel: 70% medium to high plasticity clay; 30% gravel, fine to coarse, angular to subrounded; cohesive in place; wet. Mixed Recovery.	66.0	<p>#10/20 sand filter pack (57 to 70 ft bgs).</p> <p>2-inch SCH 40 PVC 0.020-slot screen nested well (60 to 70 ft bgs).</p>
1.8	0.36				CH		Gravelly CLAY: reddish brown (5YR 4/3); 55% medium to high plasticity clay, soft; 30% fine gravel; 15% fine sand; very wet. Mixed recovery. NOTE: boring open to 68 feet bgs, boring making water.	67.5	
				70				End of boring at 70 feet bgs.	

WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWN01.GDT 3/10/21



555 17th Street, Suite 500  
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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume  
 LOCATION Salt Lake City, UT  
 DRILLING METHOD Sonic  
 SAMPLING METHOD Sonic Grab  
 GROUND ELEVATION (FT MSL) 4498.56  
 TOP OF CASING (FT MSL) S: 4497.64 D: 4497.8  
 LOGGED BY Joe Miller  
 REMARKS Groundwater measured after installation.

BORING/WELL NUMBER MW-38  
 DATE DRILLED 11/14/2020  
 CASING TYPE/DIAMETER 2-inch Schedule 40 PVC  
 SCREEN TYPE/SLOT 2-inch Schedule 40 0.020-slot  
 GRAVEL PACK TYPE #10/20 sand  
 GROUT TYPE/QUANTITY Hydrated Bentonite Chips  
 DEPTH TO WATER (FT BGS) S: 19.59 D: 18.53 BTOC  
 GROUND WATER ELEVATION (FT MSL) S: 4478.05 D: 4479.27

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							Hydrovac to 7 ft bgs.		<p>Flush-mounted Augustyn vault (10-inch).</p> <p>Portland cement seal (3 to 7 ft bgs).</p> <p>6-inch stainless steel vapor probe at 8 feet bgs with #10/20 sand filter pack (7 to 9 ft bgs).</p> <p>2-inch SCH 40 PVC blank.</p> <p>Hydrated bentonite chips (9 to 25 ft bgs).</p>
0.7	0.385		B	7.0	SM		Silty SAND: brown (7.5YR 5/4); 75% loose, fine sand; 25% silt; moist.		
				9.0			Sandy CLAY: brown (7.5YR 5/4); 70% cohesive, laminated clay; 30% sand; moist. At 10 feet bgs, sample is stiff.		
0.3	0.646			12.0	CL		Sandy CLAY: brown (7.5YR 5/4); 60% clay, less cohesive, firm; 40% sand; moist.		
0.3	0.305			13.0	CL		Sandy CLAY: brown (7.5YR 5/4); 75% clay, cohesive, stiff; 25% sand; trace fine, rounded gravel; moist.		
	0.518		B	15.0			At 16 feet bgs, increase in moisture; firm.		
0.3					CL		At 18 feet bgs, wet, sandy lens.		
0.3	0.442			19.5			GRAVEL with Sand and Clay: brown (7.5YR 5/4); 60%		
				20.0					

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM.GPJ LAEWN01.GDT 3/10/21

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-38

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/14/2020

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PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.3	0.503				GW GC		gravel, fine to coarse, angular to subrounded; 30% fine sand; 10% clay; loose; moist to wet. Sandy CLAY: brown (7.5YR 5/4); 80% clay, soft, cohesive; 20% fine sand; moist to wet.	20.5	<p>Hydrated bentonite chips (9 to 25 ft bgs).</p> <p>#10/20 sand filter pack (25 to 39 ft bgs).</p> <p>2-inch SCH 40 PVC 0.020-slot screen nested well (27 to 37 ft bgs).</p> <p>Hydrated bentonite chips (39 to 57 ft bgs).</p>
0.2	0.467						At 22 feet bgs, trace coarse gravel. Depth to water at time of drilling: 22.09 feet bgs. At 22.5 feet bgs, wet lens.		
0.1	0.355			25	CL		At 23.75 feet bgs, 2 to 3 inch clast, less moisture.		
0.2	0.485						At 25.5 feet bgs, 2 to 3 inch clast, increase in fine sand.		
0.2	0.507				CL		At 27.5 feet bgs, wet, sandy lens with trace gravel.	28.5	
0.4	0.397			30	SC		Sandy CLAY: brown (7.5YR 5/3); 70% clay, cohesive, stiff to firm; 20% fine sand; 10% gravel, fine to coarse, subangular to subrounded; dry to moist.	30.0	
0.4	0.498						Clayey SAND: brown (7.5YR 5/3); 75% sand, fine to coarse, loose; 25% clay; trace fine gravel; cohesive; wet.	32.0	
0.4	0.498						Clayey SAND with Gravel: brown (7.5YR 5/3); 60% sand, fine to coarse; 25% clay; 15% gravel, fine to coarse; loose to compact; moist to wet.	32.0	
0.4	0.395			35	SC		At 35 feet bgs, wet lens, increase in gravel.		
0.3	0.103						At 37 feet bgs, wet lens, increase in gravel.	38.0	
1.1	0.42				CL		Sandy CLAY: brown (7.5YR 5/4); 70% clay, cohesive; 30% sand; trace fine gravel; wet.	39.0	
				40	GP GC		GRAVEL with Sand and Clay: 80% gravel, fine to coarse, subangular to subrounded; 20% sand and clay; sand is poorly graded, fine to coarse; loose; wet (saturated).		
							At 41 feet bgs, increase in clay (gray layer).		
							At 42 feet bgs, 6 to 8 inch clast, then Sandy CLAY with Gravel: brown (7.5YR 5/4); 60% lean clay, cohesive, firm to	42.0	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWN01.GDT 3/10/21

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-38

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/14/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
1.1	0.446				CL		stiff; 30% fine sand; 10% fine to coarse gravel, subangular to subrounded; moist to wet.		<p>Hydrated bentonite chips (39 to 57 ft bgs).</p> <p>2-inch SCH 40 PVC blank.</p> <p>#10/20 sand filter pack (57 to 71 ft bgs).</p> <p>2-inch SCH 40 PVC 0.020-slot screen nested well (60 to 70 ft bgs).</p>
1	0.394			45			CLAY: light gray (5Y 7/2) mottled with brown; lean clay, very stiff to hard; cohesive; dry.	45.5	
1	0.095								
0.9	0.088				CL				
1	0.27			50					
1.1	0.252				SP		SAND with Gravel: dark reddish brown (5YR 3/4); 60% sand, fine to coarse; 40% gravel, fine to coarse, rounded; loose; wet.	52.5	
1.2	0.22			55	GC		Clayey GRAVEL with Sand: yellowish brown (10YR 5/4); 60% gravel, fine to coarse, subangular to subrounded; 20% clay; 20% sand; cohesive; dense; moist to wet.	54.0	
1	0.239				ML		SILT: yellowish brown (10YR 5/4); 80% silt; 10% fine sand; 10% fine gravel; very stiff; cohesive; moist.	56.0	
1	0.243				GM		Silty GRAVEL with Sand: yellowish brown (10YR 5/4); 60% gravel, poorly graded, fine to coarse, subangular to subrounded; 20% silt; 20% sand; cohesive; medium dense; moist to wet.	59.0	
				60			SAND: dark brown (10YR 3/3); poorly graded sand; loose; saturated; wet.	60.0	
1	0.15				SP				
1.1	0.12				GP		GRAVEL with Clay: brown (7.5YR 4/4); 80% gravel, fine to coarse, subangular to subrounded; 10% clay; 10% sand, medium to coarse; loose; wet.	62.5	
					GC			63.5	
					ML		SILT: brown (7.5YR 4/4); cohesive; stiff; moist to wet.	64.0	
							GRAVEL with Sand: brown (7.5YR 4/4); 70% gravel, poorly graded, fine to coarse, subangular to subrounded; 25% sand, fine to coarse; 5% clay; loose; wet.		
1	0.112			65	GP				

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWN01.GDT 3/10/21

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER MW-38

PROJECT NAME 700 S 1600 E PCE Plume

DATE DRILLED 11/14/2020

Continued from Previous Page

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.9	0.172		B		GP		GRAVEL with Sand: brown (7.5YR 4/4); 70% gravel, poorly graded, fine to coarse, subangular to subrounded; 25% sand, fine to coarse; 5% clay; loose; wet.	66.0	<p>2-inch SCH 40 PVC 0.020-slot screen nested well (60 to 70 ft bgs). #10/20 sand filter pack (57 to 71 ft bgs).</p>
1.2	0.344				GM		Silty GRAVEL: brown (7.5YR 4/3); fine to coarse gravel, rounded; cohesive; dense; moist.	67.5	
1.2	0.183		B	70	GP GM		GRAVEL with Sand and Silt: brown (7.5YR 4/3); 70% gravel, poorly graded, fine to coarse; 20% sand, fine to coarse; 10% silt; loose; wet.	70.0	<p>Hydrated bentonite chips (71 to 72 ft bgs). Native soil stuff (72 to 80 ft bgs).</p>
1.2	0.406				ML		Sandy SILT: brown (7.5YR 4/4); 80% silt, 20% sand; cohesive; firm to stiff; moist to wet.	71.0	
0.9	0.27		B	75	GP GM		GRAVEL with Sand and Silt: brown (7.5YR 4/3); 70% gravel, poorly graded, fine to coarse; 20% sand, fine to coarse; 10% silt; loose; wet.	74.0	<p>Native soil stuff (72 to 80 ft bgs).</p>
1.2	0.66				ML		Sandy SILT: 80% silt; 20% sand; trace gravel, fine to coarse; cohesive; firm; moist.	75.0	
1.3	0.423		B				At 79.5 feet bgs, increase in clay; stiff.	80.0	
					80			End of boring at 80 feet bgs.	

WHITNEY'S BORING LOG\_SLC VA PLUME DRAFT DEC2020\_WTJM/GPJ LAEWN01.GDT 3/10/21



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume  
 LOCATION Salt Lake City, UT  
 DRILLING METHOD HSA/DPT  
 SAMPLING METHOD DPT Core  
 GROUND ELEVATION (FT MSL) 4383.92  
 TOP OF CASING (FT MSL) 4383.49  
 LOGGED BY Joe Miller  
 REMARKS Replacing GW-10

BORING/WELL NUMBER RG-01  
 DATE DRILLED 4/5/2021  
 CASING TYPE/DIAMETER 2-inch Schedule 40 PVC  
 SCREEN TYPE/SLOT 2-inch Schedule 40 0.010-slot  
 GRAVEL PACK TYPE #10/20 sand  
 GROUT TYPE/QUANTITY Hydrated Bentonite Chips  
 DEPTH TO WATER (FT BGS) 8.67  
 GROUND WATER ELEVATION (FT MSL) 4375.25

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0				0			Top soil; dark brown	1.0	<p>Flush-mounted vault (6-inch).</p> <p>Hydrated bentonite chips (2 to 4.5 ft bgs).</p> <p>Soil Vapor Probe</p> <p>2-inch SCH 40 PVC blank.</p> <p>#10/20 sand filter pack (8 to 20 ft bgs). 2-inch SCH 40 PVC 0.010-slot screen well (9 to 19 ft bgs).</p>
0				0			Sandy SILT; non-cohesive; non-plastic; (7.5YR 3/3) dark brown with gray mottling; moist		
0				5	ML				
0				5	CL		Lean CLAY; stiff; low to medium plasticity; cohesive; trace gravel; (5Y 5/2) olive gray; moist		
0				7	SM		Silty SAND; medium dense; fine sand; cohesive; reddish brown/grayish brown mottled; wet		
0				10	CL		- Increase clay; trace fine gravel Sandy CLAY; lean; medium plasticity; mottled reddish brown/grayish brown; moist to wet		
0				13	SP		Poorly graded SAND with silt; fine sand, (5YR 6/6) yellowish red; wet; saturated		
0				15	SM		Silty SAND; fine sand; slightly cohesive; (7.5YR 4/3) brown; moist to wet		
0				16.5	SP		Poorly Graded SAND; fine to coarse; (7.5YR 4/3) brown; wet		
0				18.5	CL		CLAY; lean; trace gravel; medium plasticity; moist		
0				19.0	GM		Silty GRAVEL with Sand; fine to coarse gravel; fine sand; dense; moist		
				20			Boring TD at 20' bgs		

WHITNEY'S BORING LOG SLC VIA PLUME DRAFT\_051921.GPJ LAEWIND1.GDT 6/14/21





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## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL BORING/WELL NUMBER RG-02  
 PROJECT NAME 700 S 1600 E PCE Plume DATE DRILLED 4/2/2021  
 LOCATION Salt Lake City, UT CASING TYPE/DIAMETER 2-inch Schedule 40 PVC  
 DRILLING METHOD HSA SCREEN TYPE/SLOT 2-inch Schedule 40 0.010-slot  
 SAMPLING METHOD HSA Cuttings GRAVEL PACK TYPE #10/20 sand  
 GROUND ELEVATION (FT MSL) 4437.32 GROUT TYPE/QUANTITY Hydrated Bentonite Chips  
 TOP OF CASING (FT MSL) 4436.95 DEPTH TO WATER (FT BGS) 2.72  
 LOGGED BY Joe Miller GROUND WATER ELEVATION (FT MSL) 4434.60  
 REMARKS Replacing GW-11

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
3.8					ML		Sandy SILT; cohesive; (5YR 3/1) very dark gray; moist		<p>Flush-mounted vault (6-inch).          Hydrated bentonite chips (2 to 4 ft bgs).          #10/20 sand filter pack (4 to 15 ft bgs).          2-inch SCH 40 PVC 0.010-slot screen well (5 to 15 ft bgs).</p>
6.2				5	ML		Sandy SILT; slightly cohesive; fine sand; (7.5Y 3/1) very dark gray; wet	5.0	
1.4				10	SM		Silty SAND; fine to medium sand; loose; (2.5Y 5/2) grayish brown; wet (saturated)	10.0	
				15			Boring TD at 15' bgs	15.0	

WHITNEY'S BORING LOG SLC VA PLUME DRAFT\_051921.GPJ LAEWIND1.GDT 6/14/21



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume  
 LOCATION Salt Lake City, UT  
 DRILLING METHOD HSA  
 SAMPLING METHOD HSA Cuttings  
 GROUND ELEVATION (FT MSL) 4422.98  
 TOP OF CASING (FT MSL) 4422.53  
 LOGGED BY Joe Miller  
 REMARKS Replacing GW-16

BORING/WELL NUMBER RG-03  
 DATE DRILLED 4/2/2021  
 CASING TYPE/DIAMETER 2-inch Schedule 40 PVC  
 SCREEN TYPE/SLOT 2-inch Schedule 40 0.010-slot  
 GRAVEL PACK TYPE #10/20 sand  
 GROUT TYPE/QUANTITY Hydrated Bentonite Chips  
 DEPTH TO WATER (FT BGS) 3.15  
 GROUND WATER ELEVATION (FT MSL) 4419.83

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
4.0				0.4	ML		Topsoil	0.4	<p>Flush-mounted vault (6-inch).            Hydrated bentonite chips (1 to 2 ft bgs).            #10/20 sand filter pack (2 to 8 ft bgs).            2-inch SCH 40 PVC 0.010-slot screen well (3 to 8 ft bgs).</p>
				2.0	GC		Clayey GRAVEL with Sand; fine angular to subrounded gravel; fine to coarse sand; loose; (10YR 5/4) yellowish brown; moist	2.0	
2.9				5.0	SC		Clayey SAND; fine to medium sand; medium dense; cohesive; (5YR 5/2) grayish brown; wet	6.0	
				8.0			TD boring at 8' bgs	8.0	

WHITNEY'S BORING LOG SLC VIA PLUME DRAFT\_051921.GPJ LAEWIND1.GDT 6/14/21



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume  
 LOCATION Salt Lake City, UT  
 DRILLING METHOD HSA  
 SAMPLING METHOD HSA Cuttings  
 GROUND ELEVATION (FT MSL) 4415.83  
 TOP OF CASING (FT MSL) 4415.47  
 LOGGED BY Joe Miller  
 REMARKS Replacing GW-20

BORING/WELL NUMBER RG-04  
 DATE DRILLED 4/5/2021  
 CASING TYPE/DIAMETER 2-inch Schedule 40 PVC  
 SCREEN TYPE/SLOT 2-inch Schedule 40 0.010-slot  
 GRAVEL PACK TYPE #10/20 sand  
 GROUT TYPE/QUANTITY Hydrated Bentonite Chips  
 DEPTH TO WATER (FT BGS) 10.02  
 GROUND WATER ELEVATION (FT MSL) 4405.81

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.0				0.3			Sandy SILT with Gravel; fine to medium sand; fine subrounded to rounded gravel; stiff, cohesive; (7.5YR 3/3) dark brown; moist	0.3	Flush-mounted vault (6-inch).
0.0				5.0	ML				Hydrated bentonite chips (2 to 4 ft bgs).
				6.0	CL		CLAY, lean; stiff, plastic; trace fine sand; (5Y 7/2) light gray; dry	6.0	Soil Vapor Probe
				6.5	CL		Sandy CLAY; lean; cohesive; fine to medium sand; trace fine gravel; stiff; (7.5YR 4/6) strong brown; dry to moist	6.5	2-inch SCH 40 PVC blank.
0.0				10.0	CL				
0.0				12.0	CL		Gravelly CLAY; lean; cohesive; subangular to subrounded fine gravel; low plasticity; moist	12.0	
0.0				13.0	ML		Sandy SILT; lean; cohesive; fine sand; stiff; (5Y 7/2) light gray; wet	13.0	
0.0				15.0	SP		Poorly graded SAND with Silt and Gravel; fine to coarse sand; fine gravel; loose; (5Y 7/2) light gray; wet	15.0	#10/20 sand filter pack (9 to 20 ft bgs).
				18.0	CL		Sandy CLAY; lean; cohesive; low to medium plasticity; stiff; gray and light brown mottled; moist	18.0	2-inch SCH 40 PVC 0.010-slot screen well (10 to 20 ft bgs).
				20.0			TD boring at 20' bgs	20.0	

WHITNEY'S BORING LOG SLC VIA PLUME DRAFT\_051921.GPJ LAEWINN01.GDT 6/14/21

## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume  
 LOCATION Salt Lake City, UT  
 DRILLING METHOD HSA/DPT  
 SAMPLING METHOD DPT Core  
 GROUND ELEVATION (FT MSL) 4497.38  
 TOP OF CASING (FT MSL) 4496.96  
 LOGGED BY Joe Miller  
 REMARKS Drilled near former well GW-27

BORING/WELL NUMBER RG-05  
 DATE DRILLED 4/3/2021  
 CASING TYPE/DIAMETER 2-inch Schedule 40 PVC  
 SCREEN TYPE/SLOT 2-inch Schedule 40 0.010-slot  
 GRAVEL PACK TYPE #10/20 sand  
 GROUT TYPE/QUANTITY Hydrated Bentonite Chips  
 DEPTH TO WATER (FT BGS) 23.64  
 GROUND WATER ELEVATION (FT MSL) 4473.74

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
4.8							Topsoil	1.0	<p>Flush-mounted vault (6-inch).</p> <p>Hydrated bentonite chips (2 to 4 ft bgs).</p> <p>Soil Vapor Probe</p> <p>2-inch SCH 40 PVC blank.</p> <p>Hydrated bentonite chips (7 to 18 ft bgs).</p> <p>#10/20 sand filter pack (18 to 30 ft bgs).</p> <p>2-inch SCH 40 PVC 0.010-slot screen well (20 to 30 ft bgs).</p>
				5	CL		CLAY; lean; cohesive; stiff; (10YR 4/2) dark grayish brown; moist		
0.7					ML		Sandy SILT; fine sand; laminated; stiff; (10YR 4/4) dark yellowish brown; moist	6.0	
0.7				10	SM		Silty SAND; poorly graded fine; medium dense; (10YR 5/8) yellowish brown; moist	11.0	
0.0				15	ML		Sandy SILT; fine sand; cohesive; (7.5YR 4/4) brown; moist to wet	16.0	
					SP		Poorly Graded SAND; fine to coarse sand; medium dense; (7.5YR 4/4) brown; moist	17.0	
0.0				20	GM		Silty GRAVEL; fine to coarse gravel; subangular to angular; cemented in places; (5YR 4/4) reddish brown; moist	20.0	
					GP		Poorly Graded GRAVEL; fine to coarse gravel; fine to coarse sand; dense; weakly cemented; brown and gray mottled; moist	21.0	
					CL		Sandy CLAY; lean; low plasticity; firm; trace gravel; (5YR 5/6) yellowish red; moist	23.5	
0.0				25	SM		Silty SAND; poorly graded fine sand; medium dense; (5YR 5/4) reddish brown; wet	27.0	
					GP		Poorly Graded GRAVEL with Sand and Silt; fine to coarse gravel; fine to coarse sand; medium dense; (5YR 5/3) reddish brown; wet	30.0	
				30			TD boring at 30' bgs		

WHITNEY'S BORING LOG SLC VA PLUME DRAFT\_051921.GPJ LAEWIND1.GDT 6/14/21



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## BORING/WELL CONSTRUCTION LOG

**PROJECT NUMBER** 238824.6495-F3048-005.DRILL      **BORING/WELL NUMBER** RG-06  
**PROJECT NAME** 700 S 1600 E PCE Plume      **DATE DRILLED** 4/5/2021  
**LOCATION** Salt Lake City, UT      **CASING TYPE/DIAMETER** 2-inch Schedule 40 PVC  
**DRILLING METHOD** HSA      **SCREEN TYPE/SLOT** 2-inch Schedule 40 0.010-slot  
**SAMPLING METHOD** HSA Cuttings      **GRAVEL PACK TYPE** #10/20 sand  
**GROUND ELEVATION (FT MSL)** 4443.66      **GROUT TYPE/QUANTITY** Hydrated Bentonite Chips  
**TOP OF CASING (FT MSL)** 4443.23      **DEPTH TO WATER (FT BGS)** 2.31  
**LOGGED BY** Joe Miller      **GROUND WATER ELEVATION (FT MSL)** 4441.35  
**REMARKS** Replacing GW-50

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.0							Topsoil	0.8	<p>           Flush-mounted vault (6-inch).            Hydrated bentonite chips (1.5 to 3 ft bgs).            #10/20 sand filter pack (3 to 10 ft bgs).            2-inch SCH 40 PVC 0.010-slot screen well (4 to 9 ft bgs).         </p>
				5	ML		Sandy SILT; cohesive; fine sand; dark gray; moist - becomes wet		
0.0					SM		Silty SAND; fine sand; cohesive; gray; wet	6.5	
				10			TD boring at 10' bgs	10.0	

WHITNEY'S BORING LOG SLC VA PLUME DRAFT\_061421.GPJ LAEWIND1.GDT 6/14/21



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume  
 LOCATION Salt Lake City, UT  
 DRILLING METHOD HSA  
 SAMPLING METHOD HSA Cuttings  
 GROUND ELEVATION (FT MSL) 4490.30  
 TOP OF CASING (FT MSL) 4490.05  
 LOGGED BY Joe Miller  
 REMARKS Replacing GW-52

BORING/WELL NUMBER RG-07  
 DATE DRILLED 4/2/2021  
 CASING TYPE/DIAMETER 2-inch Schedule 40 PVC  
 SCREEN TYPE/SLOT 2-inch Schedule 40 0.010-slot  
 GRAVEL PACK TYPE #10/20 sand  
 GROUT TYPE/QUANTITY Hydrated Bentonite Chips  
 DEPTH TO WATER (FT BGS) 21.09  
 GROUND WATER ELEVATION (FT MSL) 4469.21

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.0							Topsoil	1.5	
					SM		Silty SAND; Fine; loose; 5YR 4/4 reddish brown; moist		
9.1				5	CL		CLAY with Sand; low plasticity; fine sand; stiff; (2.5Y 7/2) light gray; dry	5.0	
							Silty SAND; poorly graded fine sand; laminated in places; dense; (5YR 4/3) reddish brown; moist	6.0	
2.5				10	SM				
3.4				15	SW		Well Graded SAND with Gravel; fine to coarse sand; fine to coarse rounded to subangular gravel; loose; (5YR 4/3) reddish brown; moist	15.0	
0				20	SM		Silty SAND; fine to coarse; cohesive; compact; trace gravel; (5YR 3/4) dark reddish brown; moist to wet	20.0	
0				25			-Increase moisture	26.0	
					SC		Clayey SAND; fine sand; medium dense; (5YR 4/6) yellowish red; wet		
				30			TD boring at 30' bgs	30.0	

WHITNEY'S BORING LOG SLC VA PLUME DRAFT\_051921.GPJ LAEWINN01.GDT 6/14/21



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume  
 LOCATION Salt Lake City, UT  
 DRILLING METHOD HSA/DPT  
 SAMPLING METHOD DPT Core  
 GROUND ELEVATION (FT MSL) 4455.17  
 TOP OF CASING (FT MSL) 4454.74  
 LOGGED BY Joe Miller  
 REMARKS Replacing GW-53

BORING/WELL NUMBER RG-08  
 DATE DRILLED 4/6/2021  
 CASING TYPE/DIAMETER 2-inch Schedule 40 PVC  
 SCREEN TYPE/SLOT 2-inch Schedule 40 0.010-slot  
 GRAVEL PACK TYPE #10/20 sand  
 GROUT TYPE/QUANTITY Hydrated Bentonite Chips  
 DEPTH TO WATER (FT BGS) 5.72  
 GROUND WATER ELEVATION (FT MSL) 4449.45

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
							Concrete	1.0	<p>Flush-mounted vault (6-inch).</p> <p>Hydrated bentonite chips (2 to 4 ft bgs). Soil Vapor Probe</p> <p>2-inch SCH 40 PVC blank.</p> <p>#10/20 sand filter pack (7 to 20 ft bgs). 2-inch SCH 40 PVC 0.010-slot screen well (8 to 18 ft bgs).</p>
					CL		Gravelly CLAY; cohesive; low plasticity; fine gravel; (2.5YR 6/2) light brownish gray; moist	2.0	
					SM		Silty SAND; poorly graded fine to coarse sand; medium dense; (2.5YR 6/2) light brownish gray; moist	3.0	
					GP		Sandy GRAVEL with SILT; poorly graded, fine to coarse rounded to subrounded gravel; dense; (10YR 6/2) light brownish gray with orange/yellow mottling; moist	5.0	
0.0				5	ML		Clayey SILT; slightly cohesive; trace fine gravel; stiff; (10YR 6/4) light yellowish brown; moist to wet	7.0	
					SM		Silty SAND; poorly graded fine sand; cohesive; dense; (7.5YR 5/4) brown; wet		
				10			-saturated		
0.0					GP		Poorly graded GRAVEL; fine to coarse gravel; fine sand; loose; (7.5YR 5/4) brown; wet	12.0	
					ML		SILT; shosive; stiff; (7.5YR 5/4) brown; moist	13.0	
				15	GM		Silty GRAVEL with Sand; fine to coarse angular to rounded gravel; fine sand; cohesive; medium dense; (5YR 6/4) light reddish brown; wet	15.0	
0.0					ML		Clayey SILT; cohesive; firm; (5YR 4/4) reddish brown; moist	18.5	
				20	ML		Gravelly SILT; cohesive; fine gravel; firm; (5YR 4/4) reddish brown; moist	19.0	
							TD boring at 20' bgs	20.0	

WHITNEY'S BORING LOG SLC VA PLUME DRAFT\_051921.GPJ LAEWIND1.GDT 6/14/21



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume  
 LOCATION Salt Lake City, UT  
 DRILLING METHOD HSA  
 SAMPLING METHOD HSA Cuttings  
 GROUND ELEVATION (FT MSL) 4385.39  
 TOP OF CASING (FT MSL) 4384.93  
 LOGGED BY Joe Miller  
 REMARKS Replacing GW-59

BORING/WELL NUMBER RG-09  
 DATE DRILLED 4/1/2021  
 CASING TYPE/DIAMETER 2-inch Schedule 40 PVC  
 SCREEN TYPE/SLOT 2-inch Schedule 40 0.010-slot  
 GRAVEL PACK TYPE #10/20 sand  
 GROUT TYPE/QUANTITY Hydrated Bentonite Chips  
 DEPTH TO WATER (FT BGS) 5.21  
 GROUND WATER ELEVATION (FT MSL) 4380.18

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
7.1							Topsoil	0.5	<p>Flush-mounted vault (6-inch).            Hydrated bentonite chips (1.5 to 3.5 ft bgs).            #10/20 sand filter pack (3.5 to 15 ft bgs).            2-inch SCH 40 PVC 0.010-slot screen well (5 to 15 ft bgs).</p>
				5	ML		Silty CLAY; trace gravel; low plasticity; (2.5Y 5/3) light olive brown; moist		
6.5							Sandy SILT; fine sand; stiff; (10YR 4/3) brown; wet	7.0	
5.3				10	ML		-increase sand		
				15			TD boring at 15' bgs	15.0	

WHITNEY'S BORING LOG SLC VA PLUME DRAFT\_051921.GPJ LAEWIND1.GDT 6/14/21



## BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL  
 PROJECT NAME 700 S 1600 E PCE Plume  
 LOCATION Salt Lake City, UT  
 DRILLING METHOD HSA/DPT  
 SAMPLING METHOD DPT Core  
 GROUND ELEVATION (FT MSL) 4410.37  
 TOP OF CASING (FT MSL) 4409.82  
 LOGGED BY Joe Miller  
 REMARKS Replacing GW-61

BORING/WELL NUMBER RG-10  
 DATE DRILLED 4/7/2021  
 CASING TYPE/DIAMETER 2-inch Schedule 40 PVC  
 SCREEN TYPE/SLOT 2-inch Schedule 40 0.010-slot  
 GRAVEL PACK TYPE #10/20 sand  
 GROUT TYPE/QUANTITY Hydrated Bentonite Chips  
 DEPTH TO WATER (FT BGS) 26.95  
 GROUND WATER ELEVATION (FT MSL) 4383.42

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.2							Topsoil	1.0	
0.0					GM	Silty GRAVEL; fine to coarse gravel; dense; (2.5Y 5/4) light olive brown; moist	2.5		
						SILT; cohesive; firm; (2.5Y 3/3) dark olive brown; moist			
0.1			5		ML		7.5		
					ML	Sandy SILT; cohesive; firm; fine sand; (2.5Y 13/1) very dark gray; moist			
0.3			10		SM	Silty SAND; poorly graded fine to coarse sand; dense; (7.5YR 4/4) brown; moist	10.0		
					GM	Silty GRAVEL with Sand; fine to coarse rounded to subangular gravel; fine to coarse sand; dense; (7.5YR 3/3) dark brown; moist	12.0		
0.1			15		SP	Poorly graded SAND; fine to coarse sand; fine gravel; compact; (7.5YR 4/3) brown; moist - moist to wet (not saturated)	14.0		
					GP	Poorly graded GRAVEL with Silt and Sand; fine to coarse gravel; fine sand; dense; (7.5YR 4/3) brown; moist	18.0		
0.0			20		GP		22.5		
					CL	Sandy CLAY; fine sand; cohesive; (7.5YR 4/3) brown; moist -trace fine rounded gravel	24.0		
			25		SP	Poorly graded SAND; fine to medium sand; dense; (10YR 4/6) dark yellowish brown; wet	25.0		
0.0					GP	Poorly graded GRAVEL; fine to coarse angular to subrounded gravel; dense; moist -becomes wet; increase sand	28.0		
					GP	Poorly graded GRAVEL with Sand; fine to coarse rounded to subrounded gravel; coarse sand; dense; (10YR 4/6) dark yellowish brown; wet	29.0		
			30		ML	SILT; cohesive; firm; dark gray to light gray mottled; moist	30.0		
						TD boring at 30' bgs			



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 Denver, CO 80202  
 (303) 383-2300

# BORING/WELL CONSTRUCTION LOG

**PROJECT NUMBER** 238824.6495-F3048-005.DRILL  
**PROJECT NAME** 700 S 1600 E PCE Plume  
**LOCATION** Salt Lake City, UT  
**DRILLING METHOD** HSA/DPT  
**SAMPLING METHOD** DPT Core  
**GROUND ELEVATION (FT MSL)** 4504.70  
**TOP OF CASING (FT MSL)** 4504.39  
**LOGGED BY** Joe Miller  
**REMARKS**

**BORING/WELL NUMBER** RG-11  
**DATE DRILLED** 4/7/2021  
**CASING TYPE/DIAMETER** 2-inch Schedule 40 PVC  
**SCREEN TYPE/SLOT** 2-inch Schedule 40 0.010-slot  
**GRAVEL PACK TYPE** #10/20 sand  
**GROUT TYPE/QUANTITY** Hydrated Bentonite Chips  
**DEPTH TO WATER (FT BGS)** 29.09  
**GROUND WATER ELEVATION (FT MSL)** 4475.61

PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0.4					ML		Asphalt	0.5	
0.3					SM		Sandy SILT; trace fine gravel; firm; (7.5YR 5/3) brown; moist	3.0	
0				5			-increase moisture -quartzite cobble from 8-9'		
0				10	SC		Clayey SAND; fine to coarse sand; slightly cohesive; (5YR 4/4) reddish brown; moist	10.0	
0					SP		Poorly graded SAND with Gravel; fine to coarse sand; fine to coarse subangular to subangular gravel; (2.5YR 5/3) reddish brown; moist -Cobble	11.5	
0				15				17.0	
0					CL		Lean CLAY; trace fine sand; cohesive; soft; moist to wet	18.0	
0				20	SC		Clayey SAND; fine to coarse sand; trace fine gravel; compact; cohesive; moist to wet	20.5	
0					GP		Poorly graded GRAVEL; fine to coarse gravel; fine to coarse sand; cemented in places; very dense; dry to moist	26.0	
0				25				26.0	
0					CL		Lean CLAY; low to medium plasticity; trace fine gravel; cohesive; hard; (10YR 5/4) yellowish brown; moist	29.0	
0				30	ML		SILT with Sand; cohesive; firm; (10YR 5/4) yellowish brown; moist to wet	33.5	
0					SM		Silty SAND; fine to coarse sand; trace fine gravel; medium dense; (7.5YR 5/6) strong brown; moist to wet	35.0	

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WHITNEY'S BORING LOG SLC VA PLUME DRAFT\_051921.GPJ LAEWIND1.GDT 6/14/21



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# BORING/WELL CONSTRUCTION LOG

PROJECT NUMBER 238824.6495-F3048-005.DRILL

BORING/WELL NUMBER RG-11

PROJECT NAME 700 S 1600 E PCE Plume

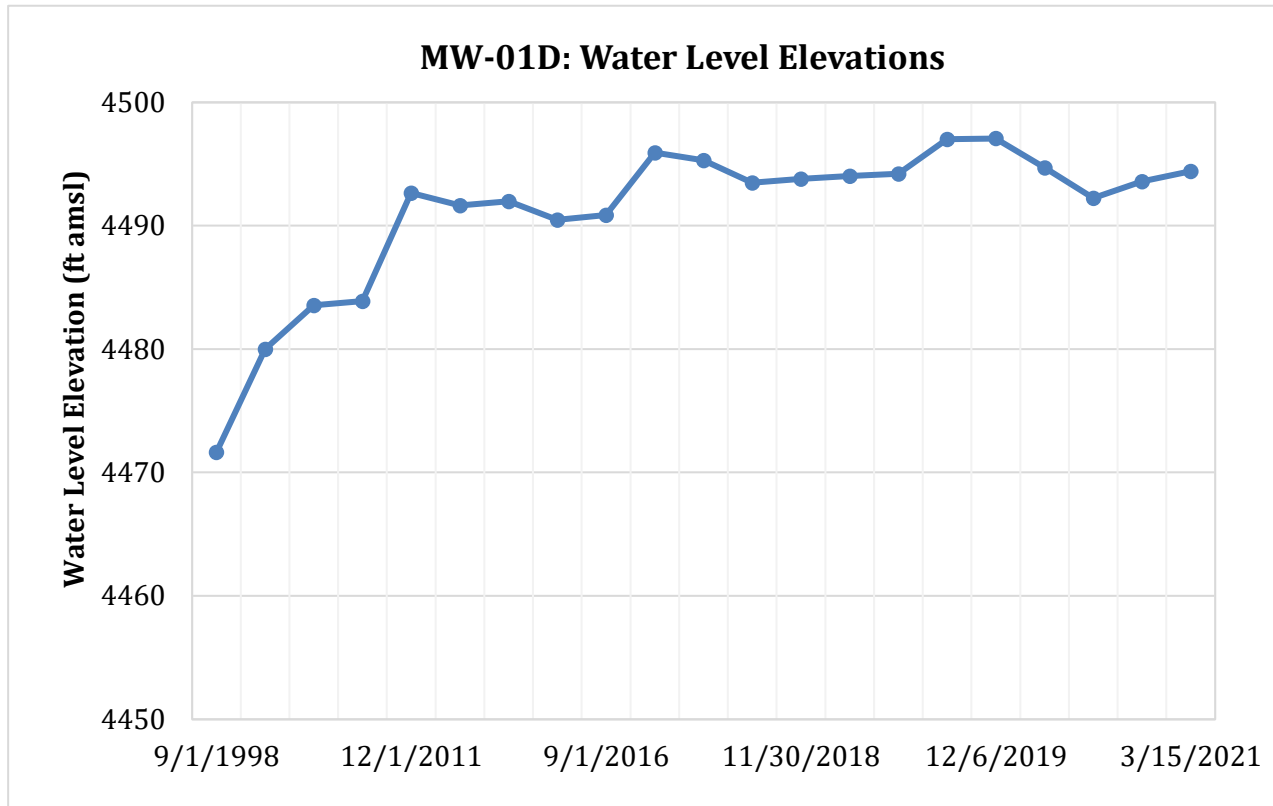
DATE DRILLED 4/7/2021

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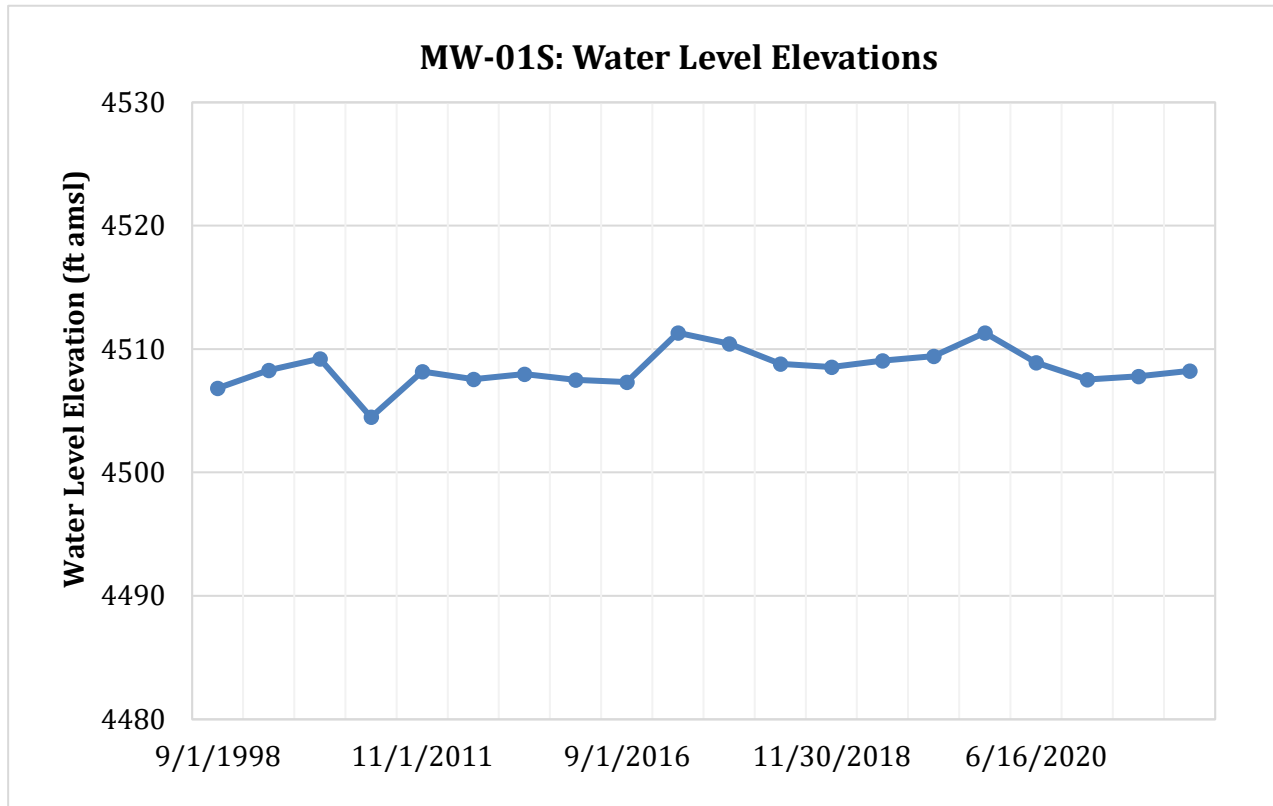
PID (ppm)	Magnetic Susceptibility	SAMPLE ID.	EXTENT	DEPTH (ft. BGL)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH	WELL DIAGRAM
0				40	GM		<p>Silty GRAVEL; fine to coarse subrounded to subangular gravel; cemented in places; dense; moist to wet</p> <p>-becomes saturated</p> <p>TD boring at 40' bgs</p>	40.0	<p>30 ft bgs).          2-inch SCH 40          PVC 0.010-slot          screen well (30          to 40 ft bgs).</p>

WHITNEY'S BORING LOG SLC VA PLUME DRAFT\_051921.GPJ LAEWN01.GDT 6/14/21

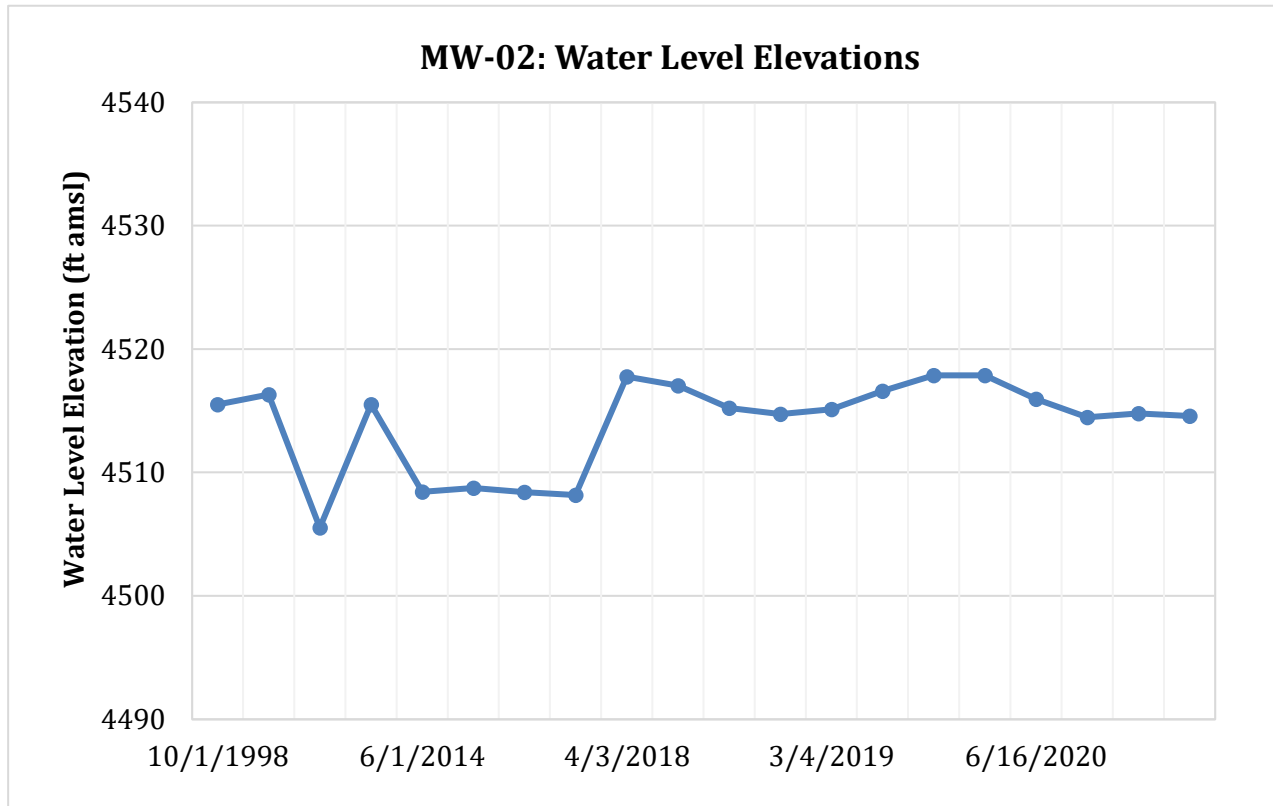
**Appendix G**  
**Water Level Elevations**



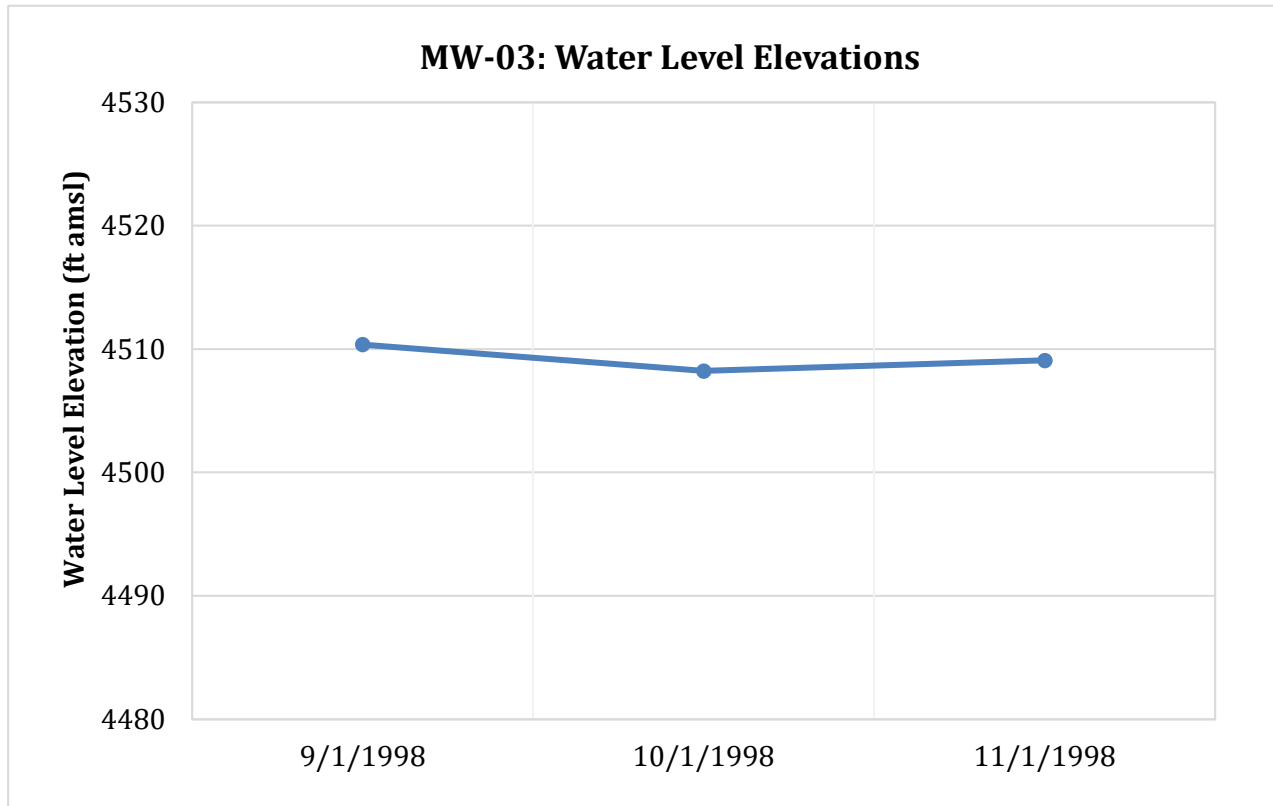
**Appendix G**  
**Water Level Elevations**



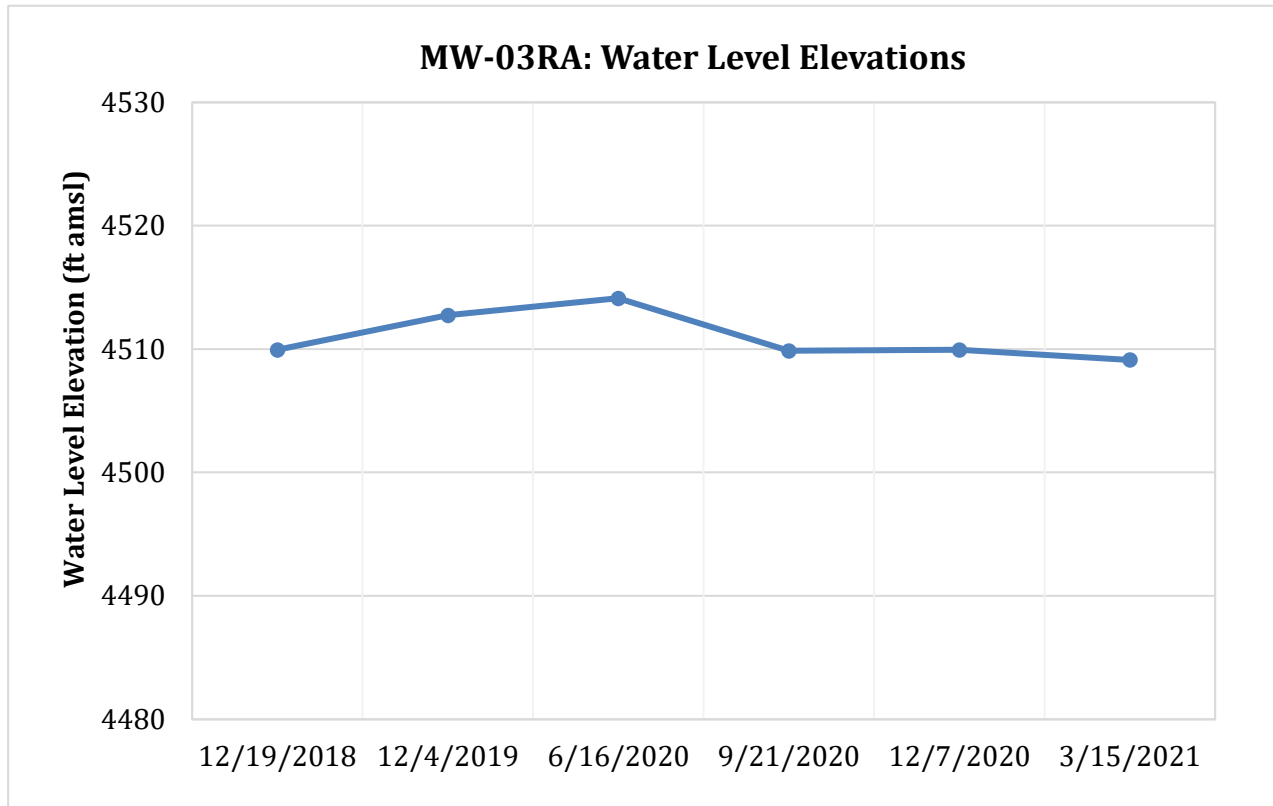
**Appendix G**  
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**Appendix G**  
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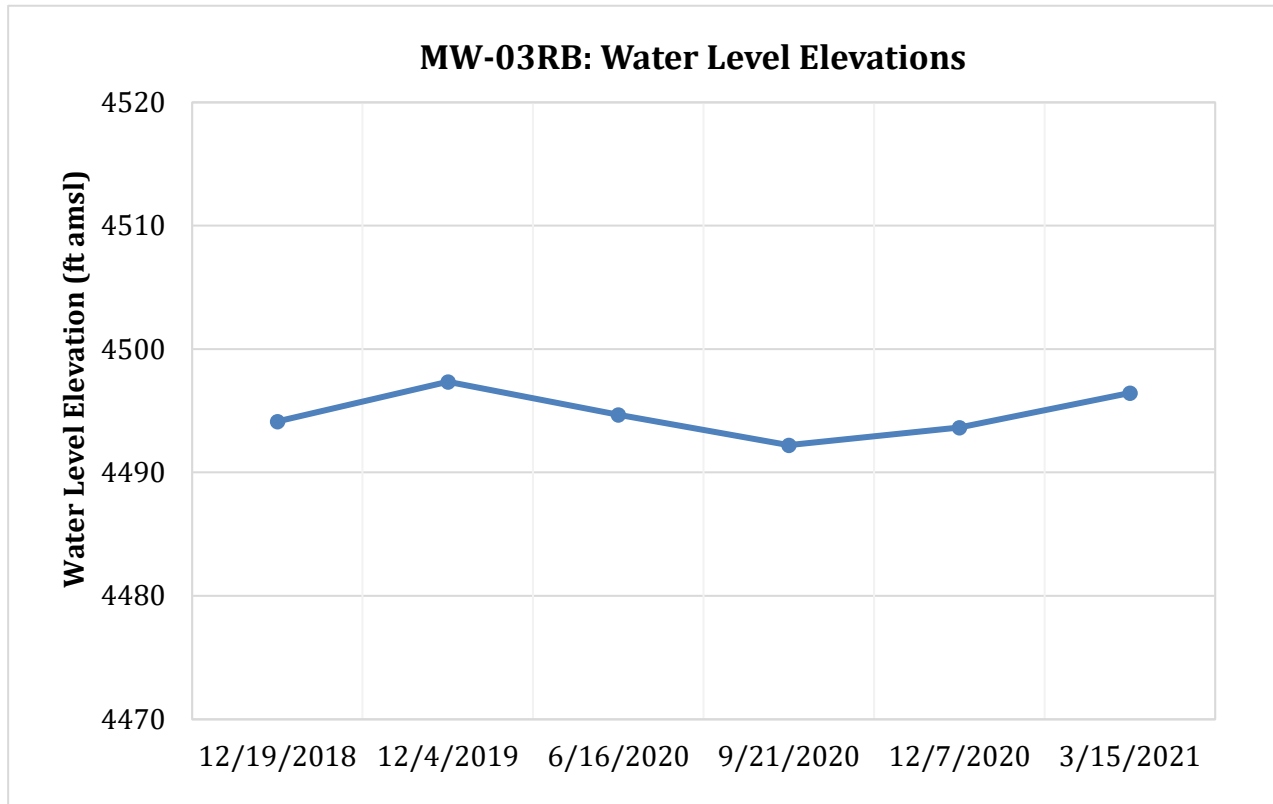


**Appendix G**  
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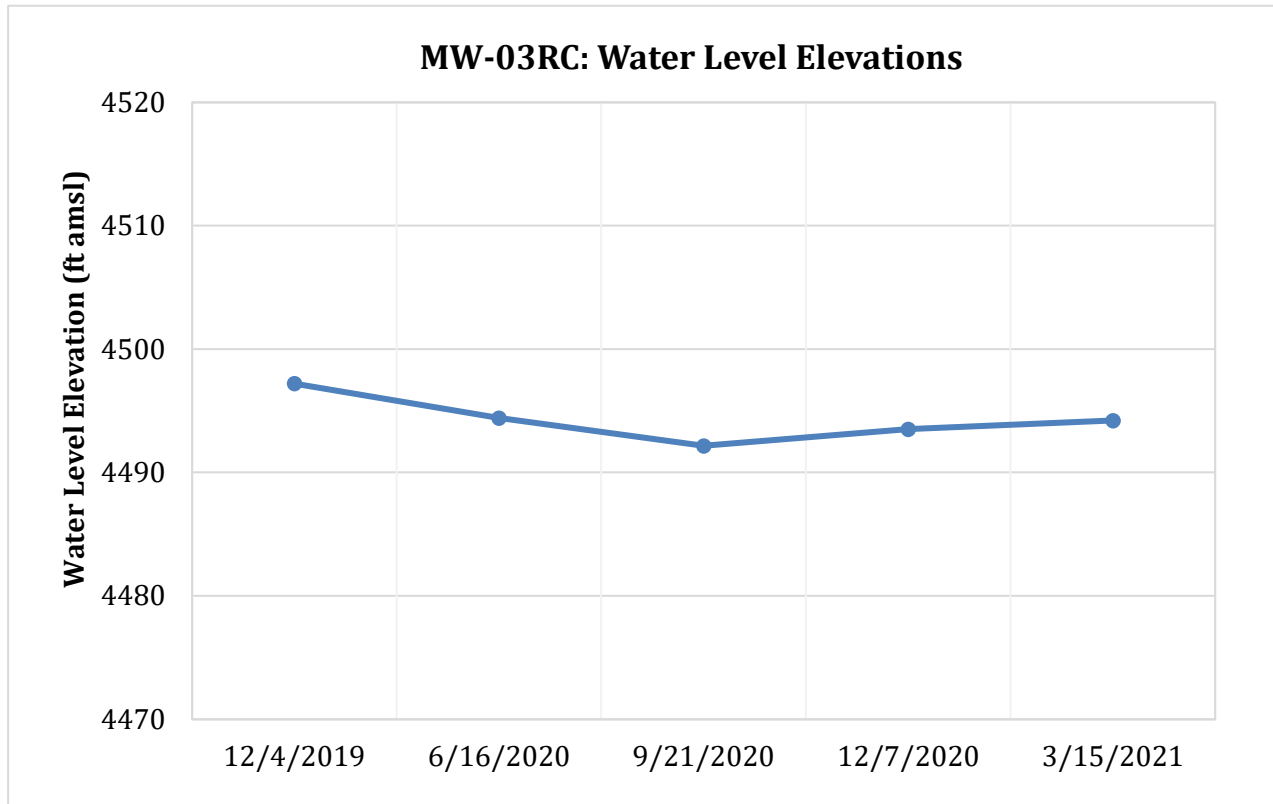




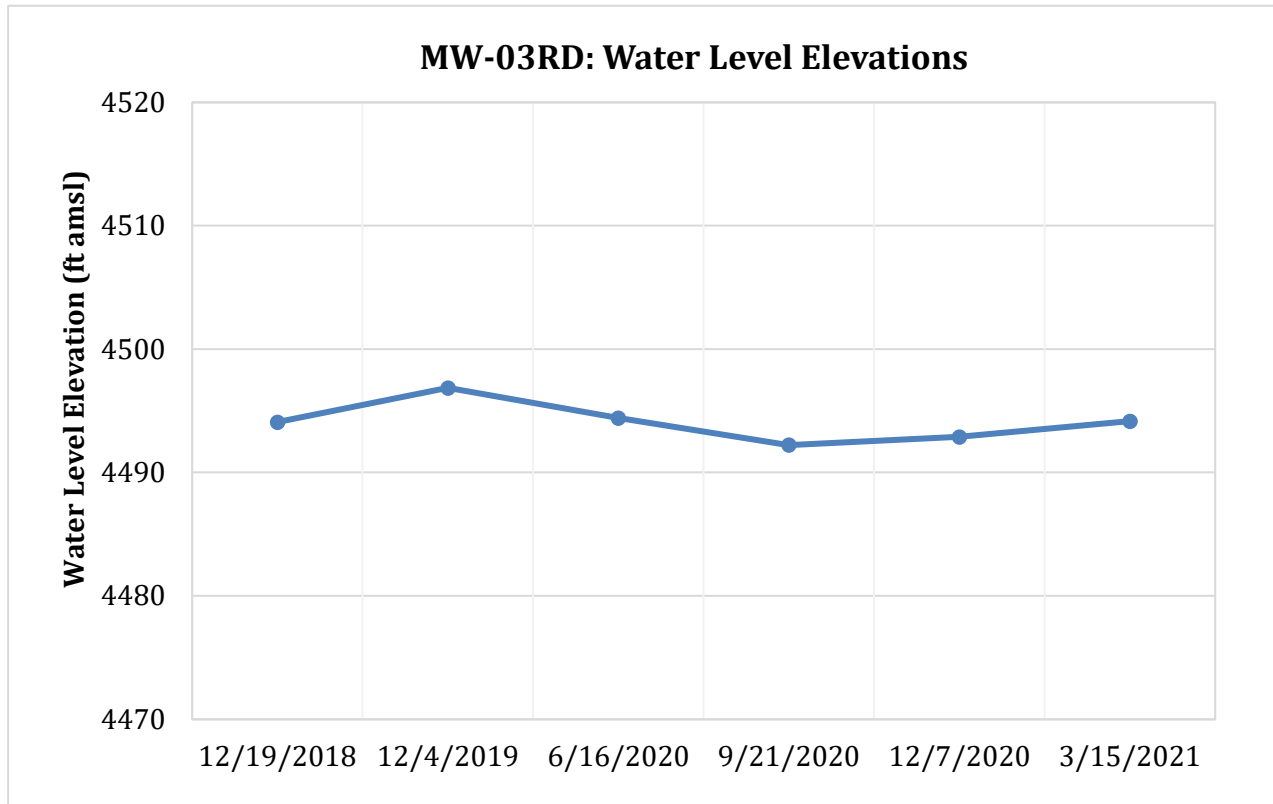
**Appendix G**  
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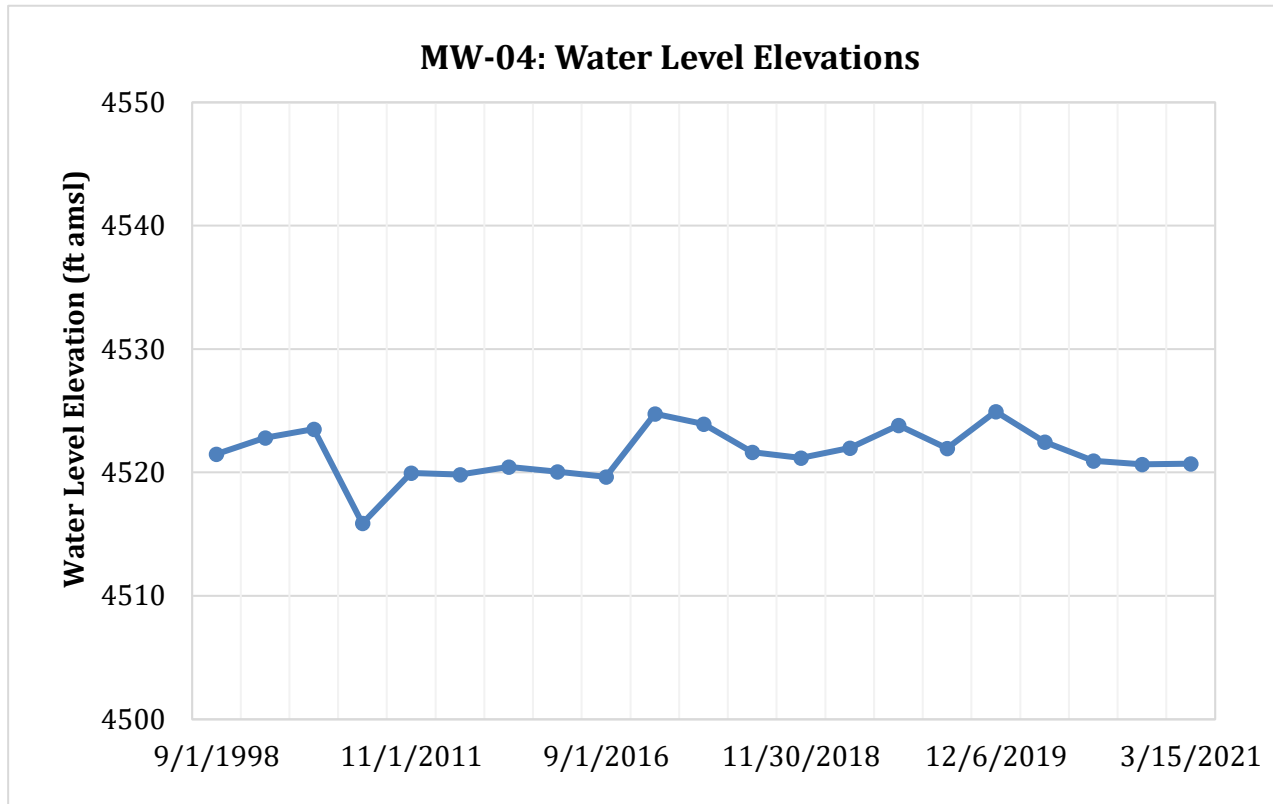
**Appendix G**  
**Water Level Elevations**



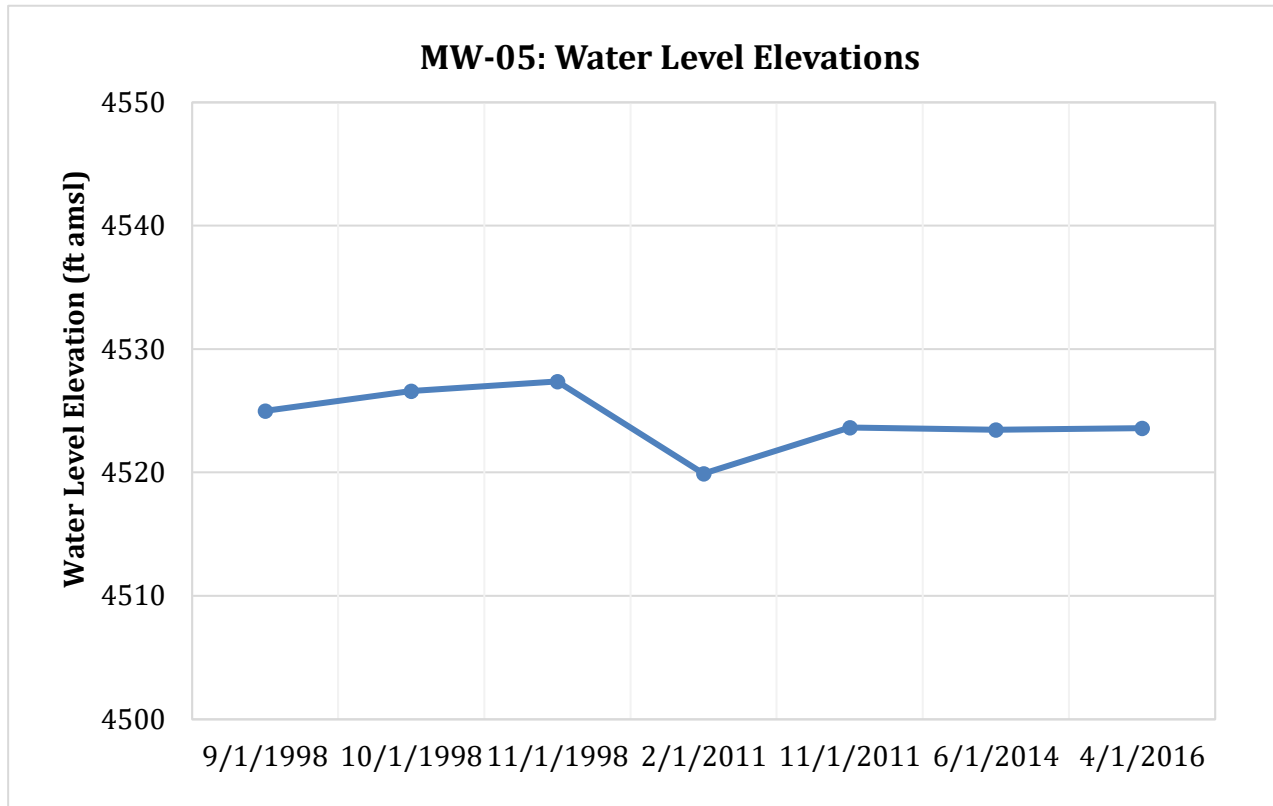
**Appendix G**  
**Water Level Elevations**



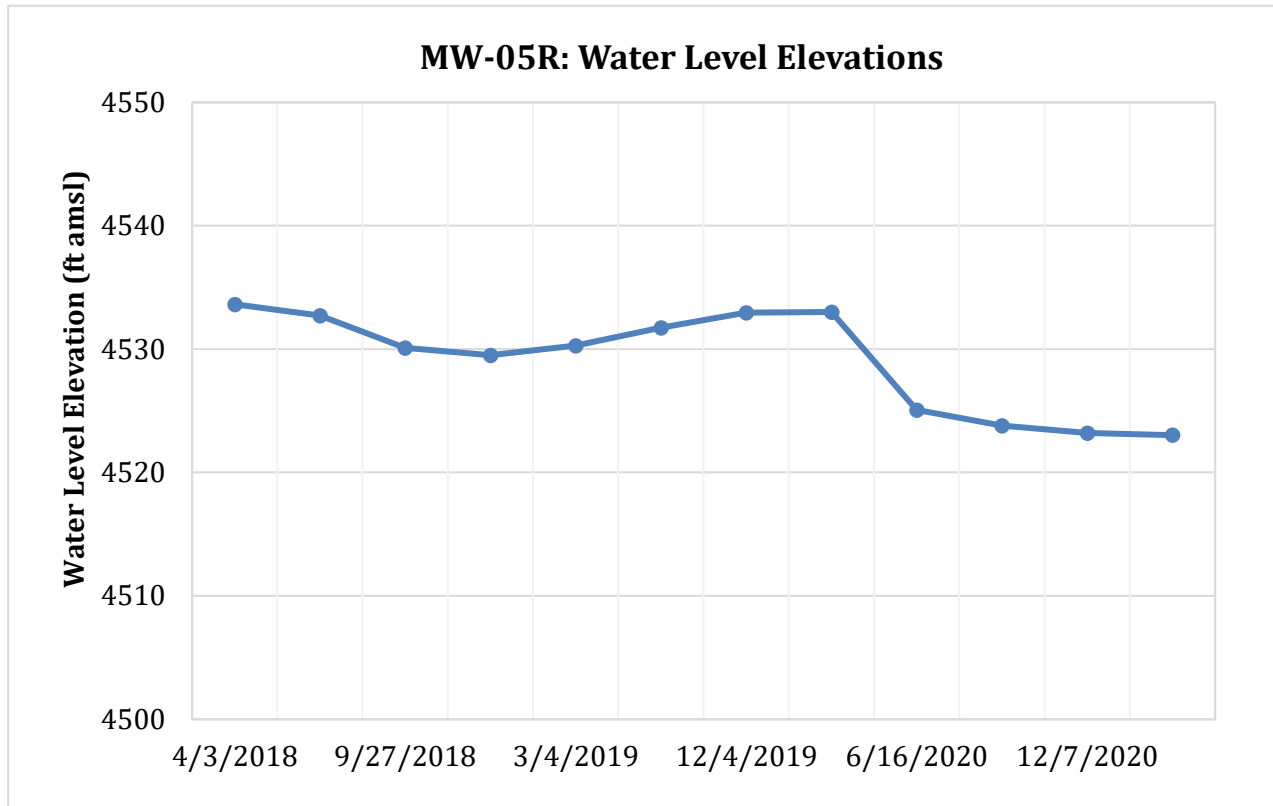
**Appendix G  
Water Level Elevations**



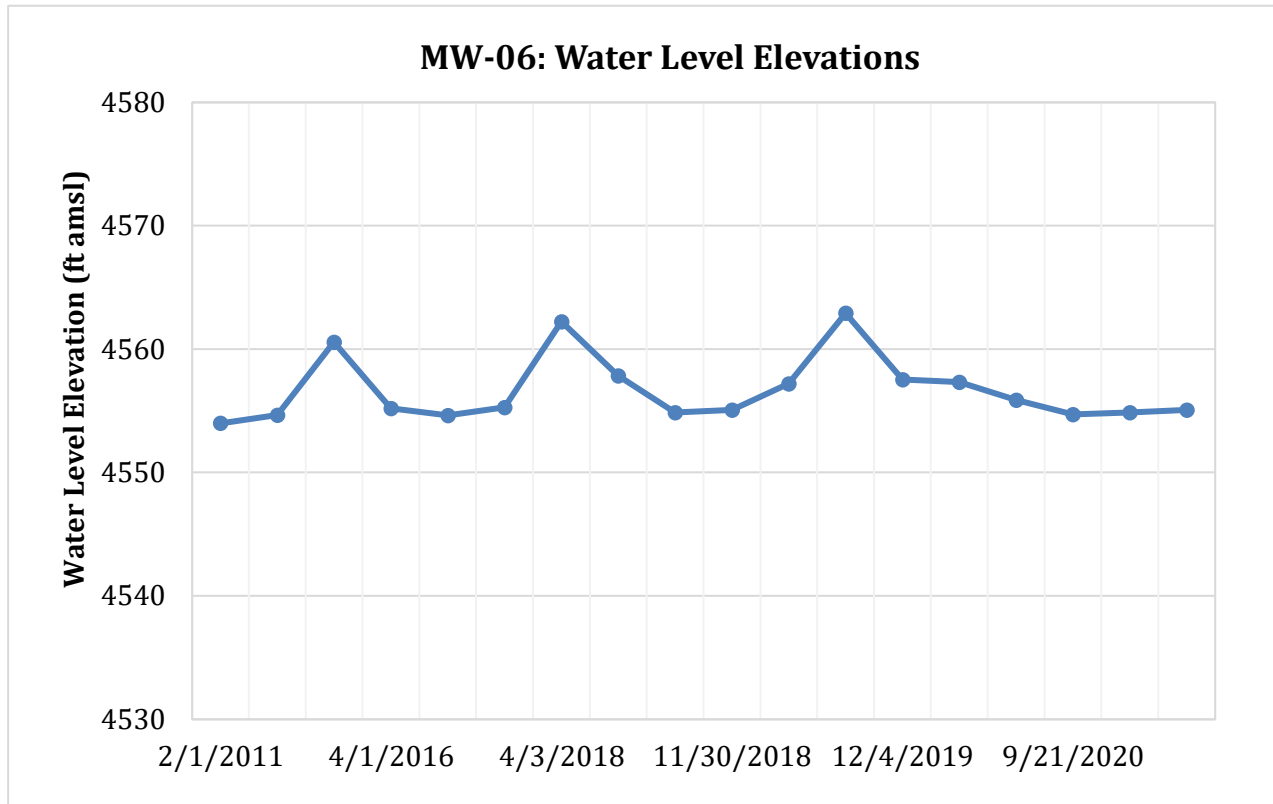
**Appendix G  
Water Level Elevations**



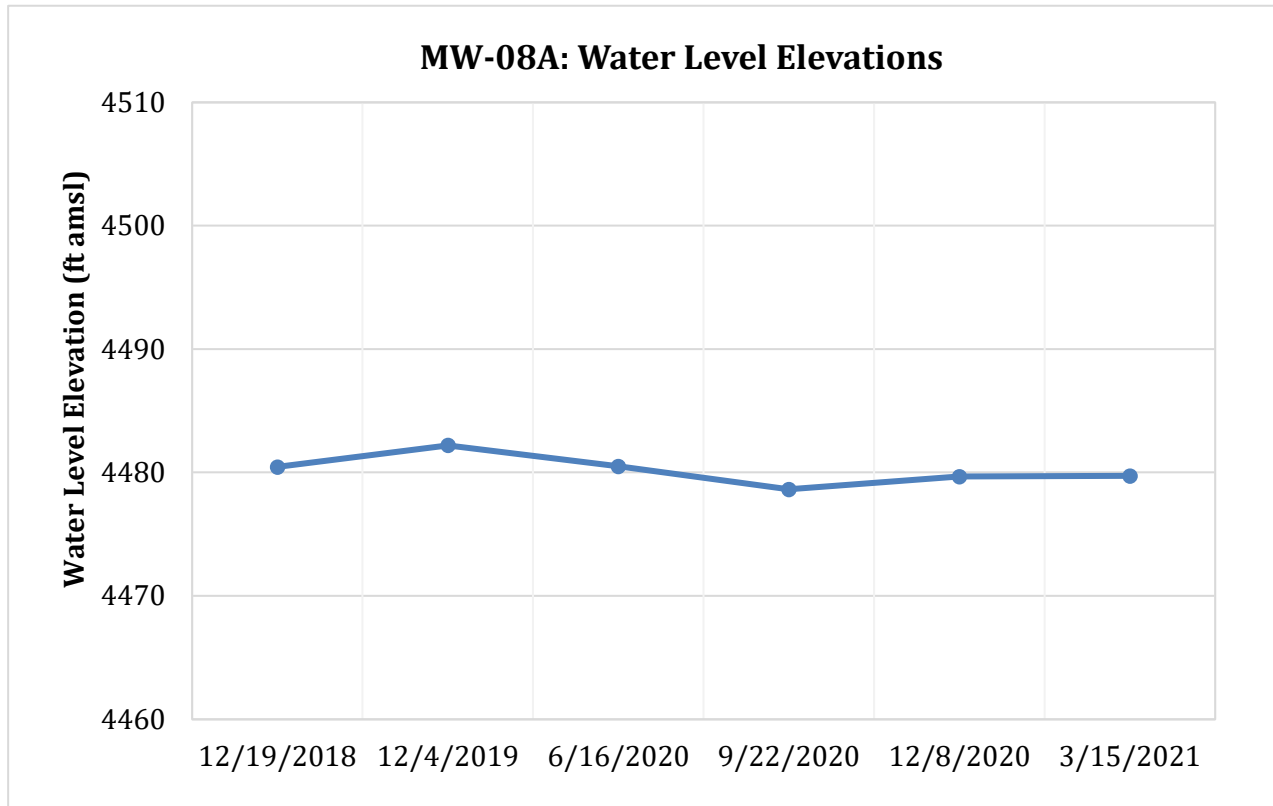
**Appendix G  
Water Level Elevations**



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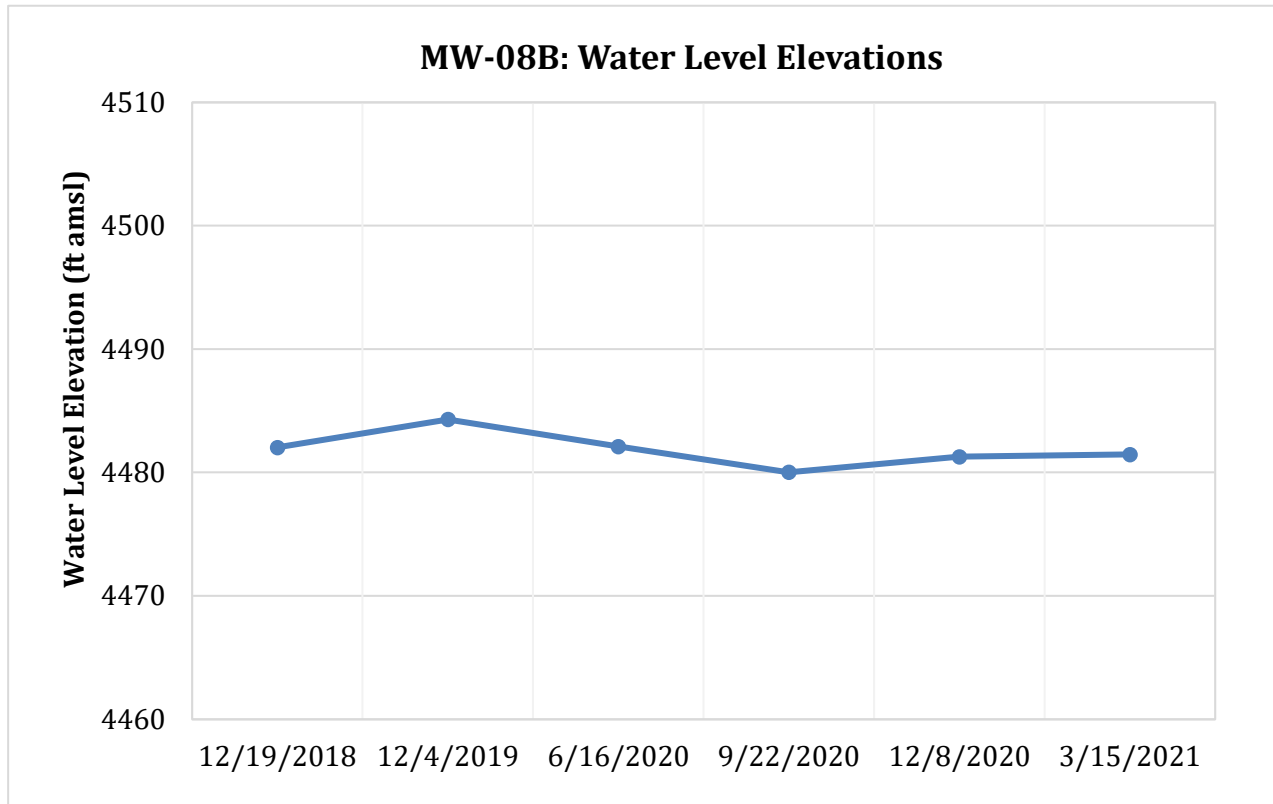


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**Water Level Elevations**

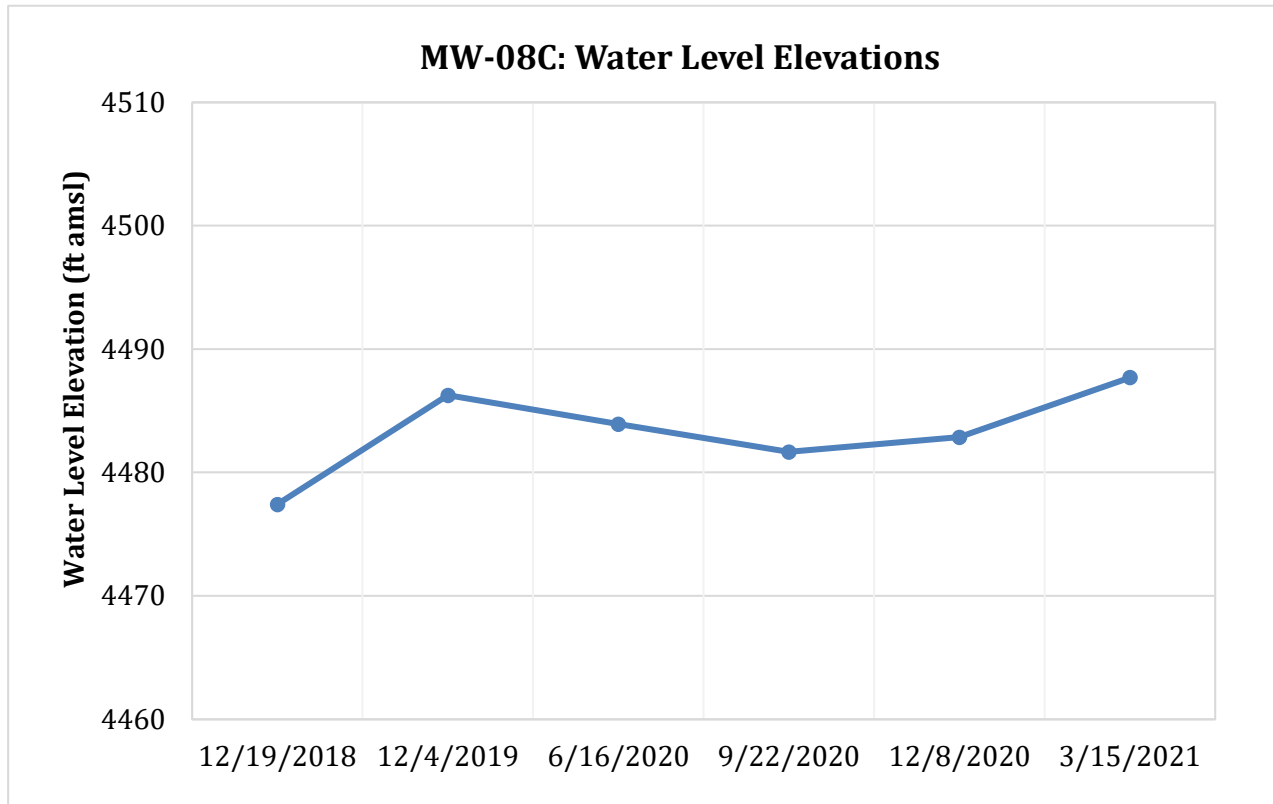




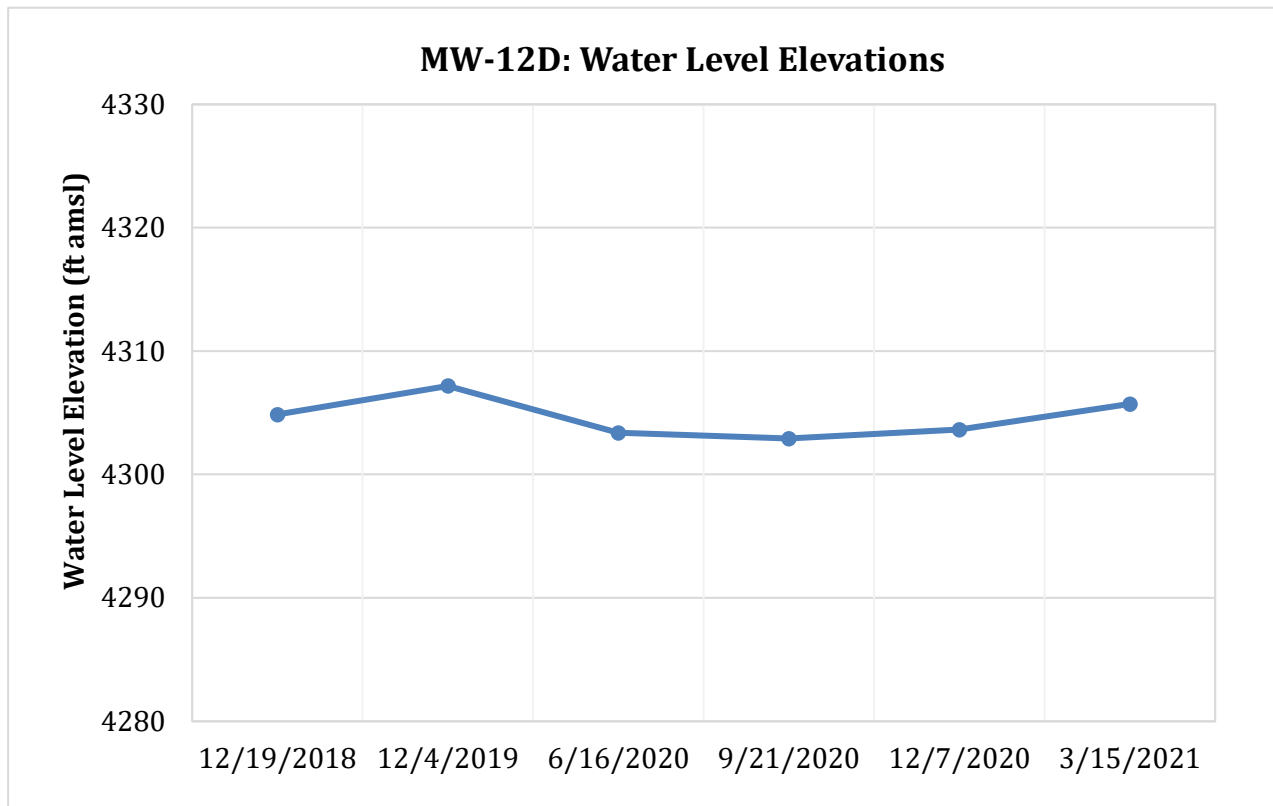
**Appendix G**  
**Water Level Elevations**



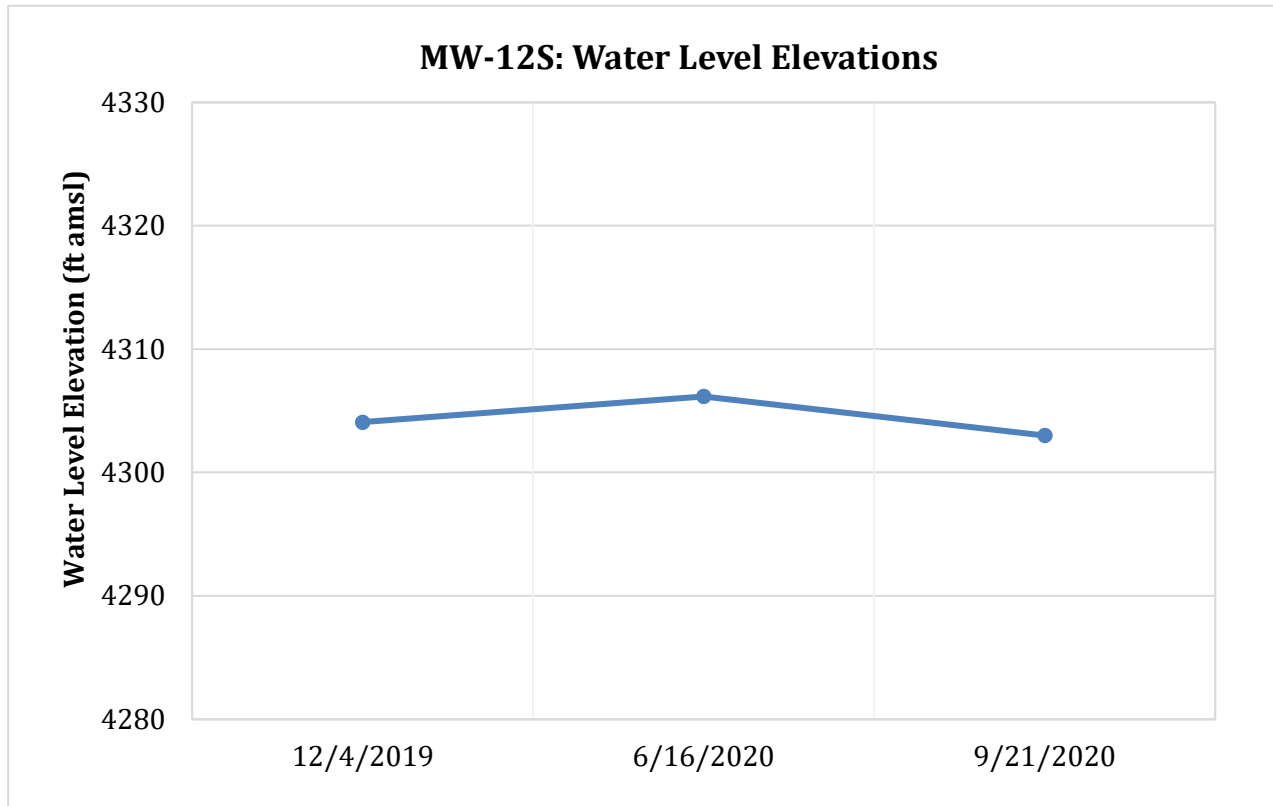
**Appendix G**  
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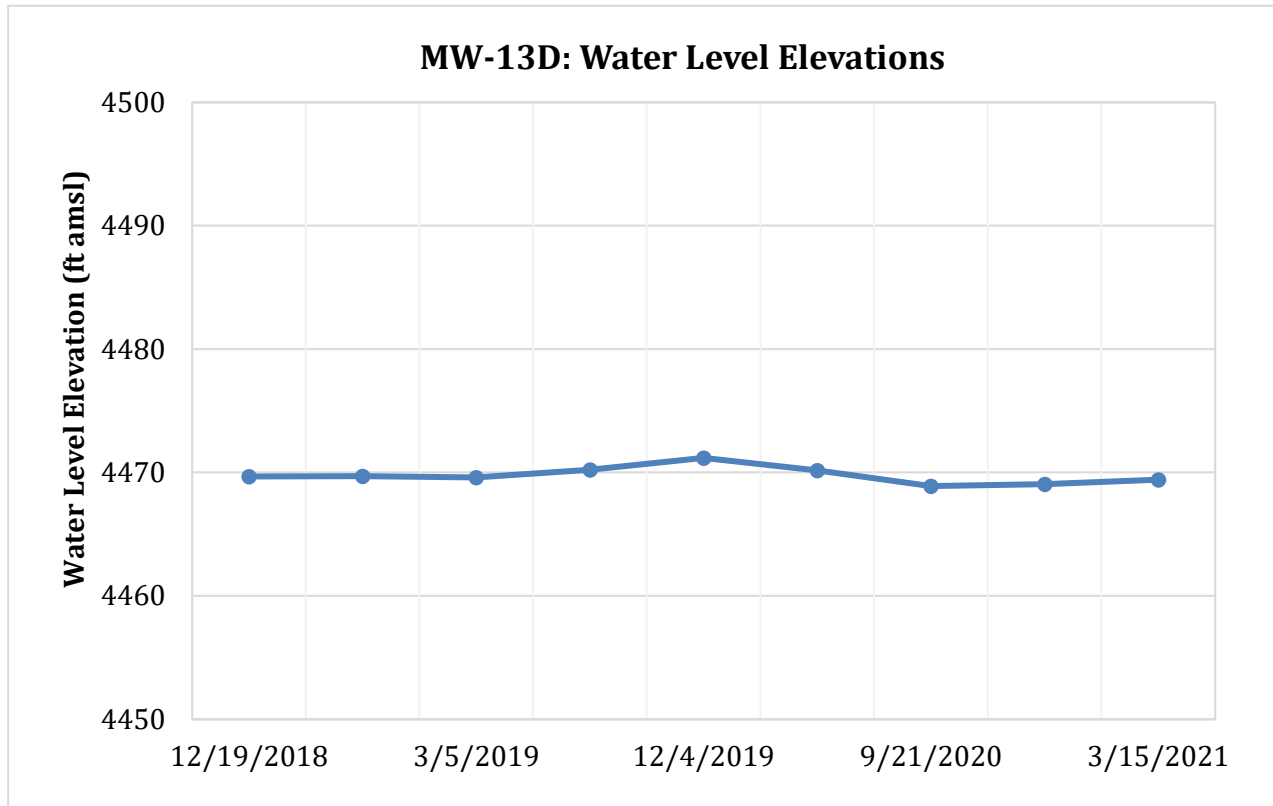
**Appendix G**  
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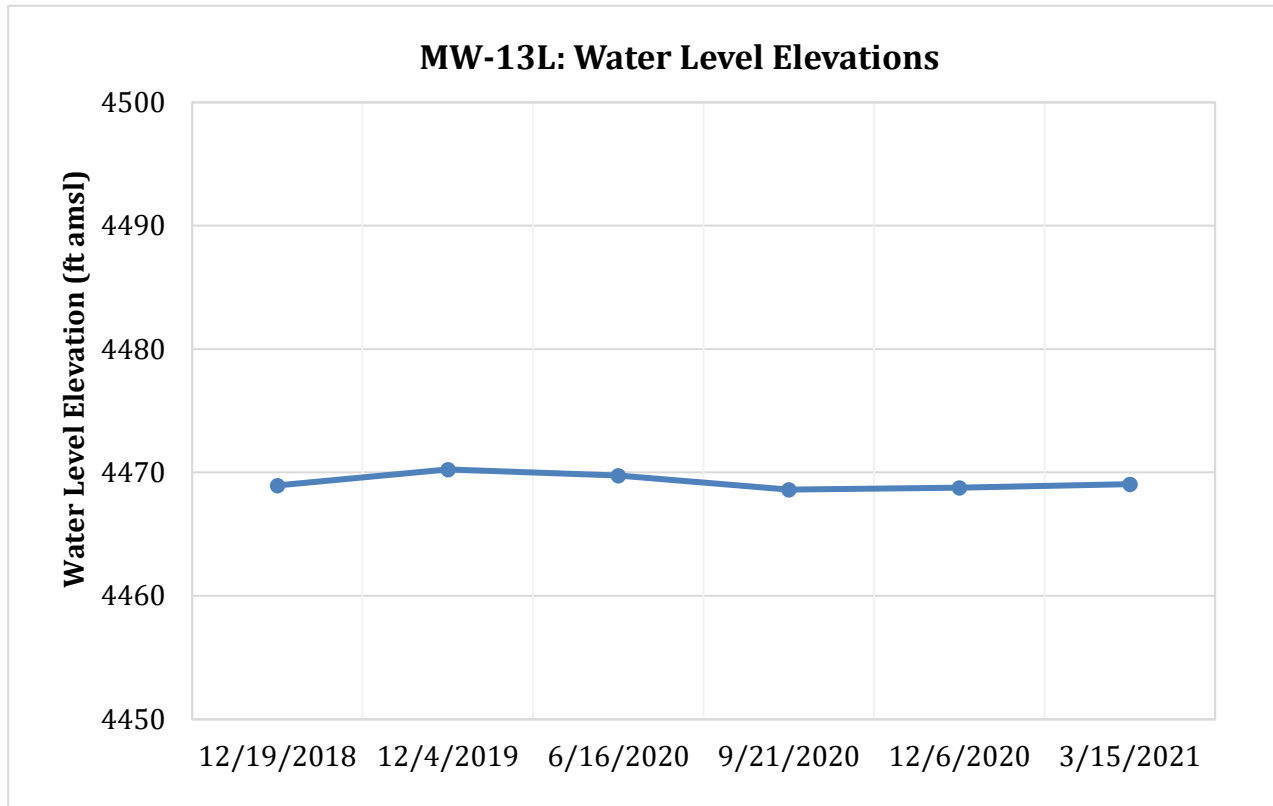
**Appendix G**  
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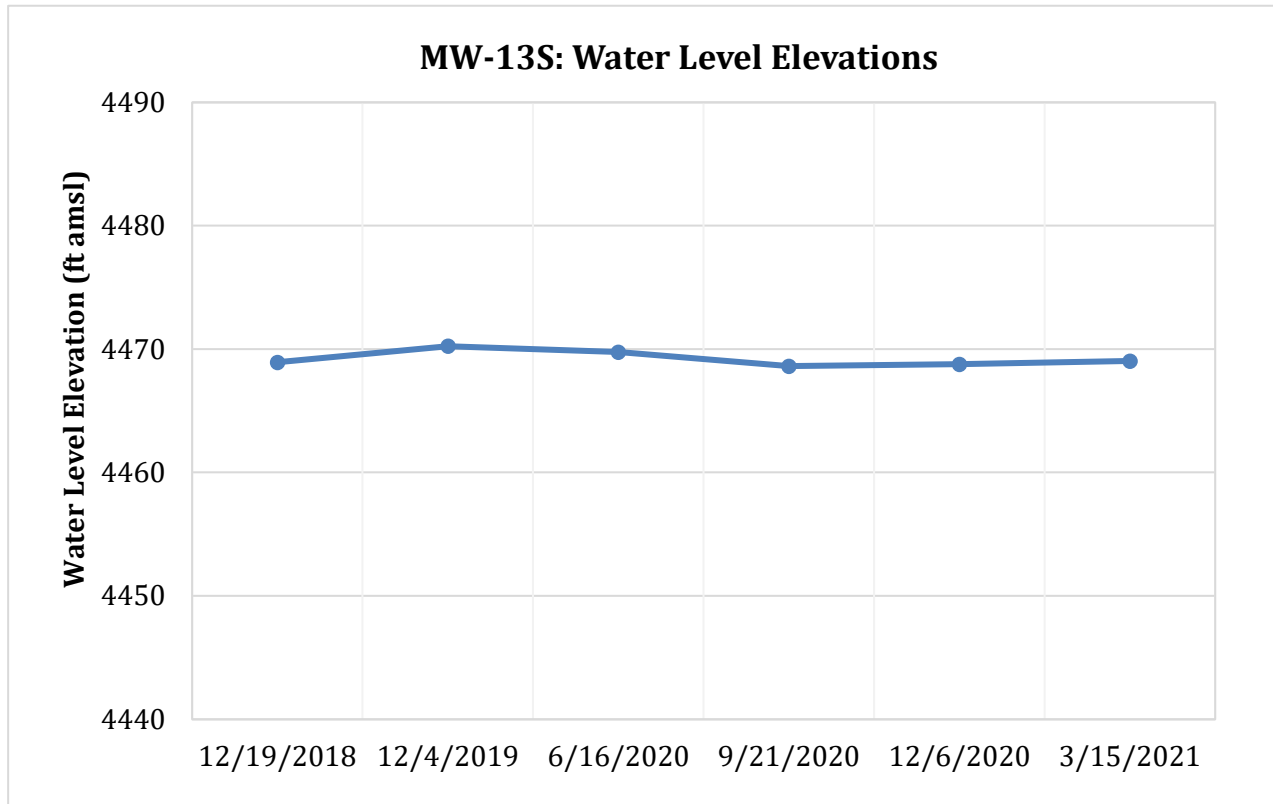
**Appendix G**  
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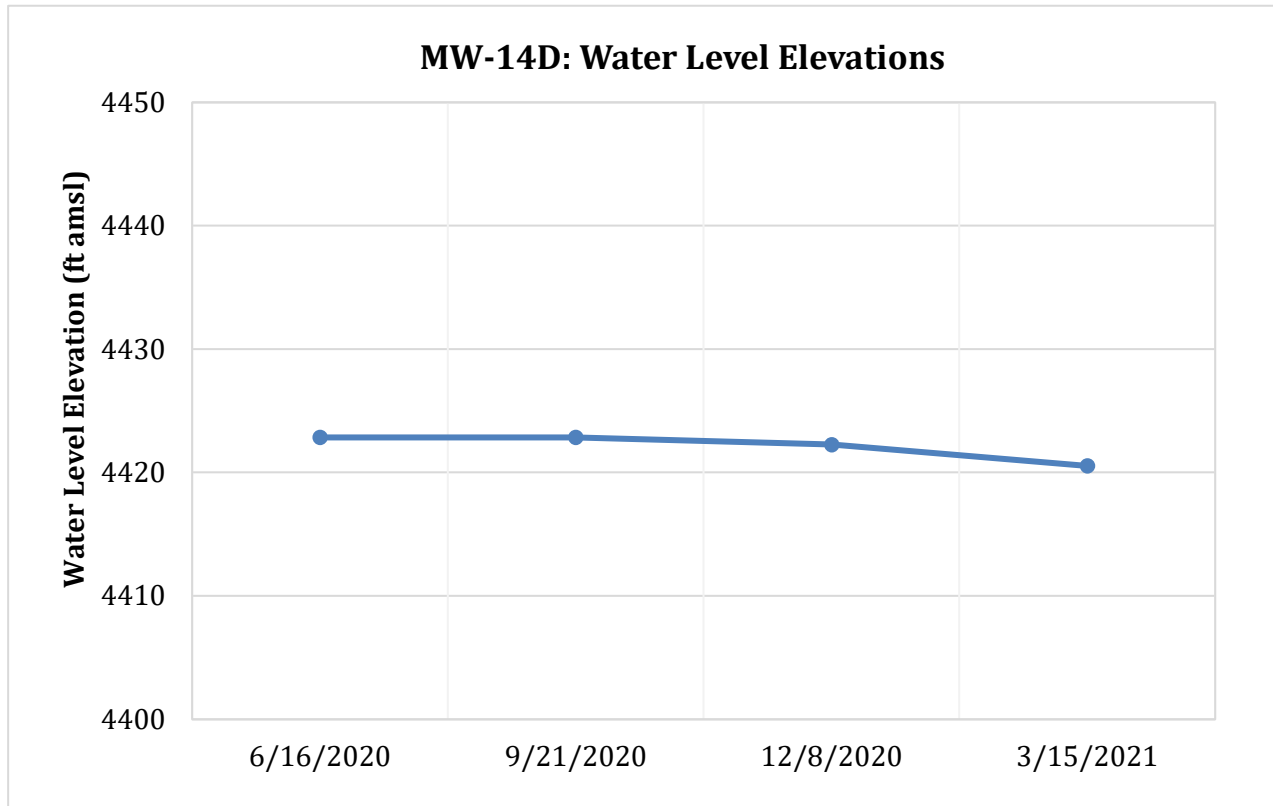
**Appendix G**  
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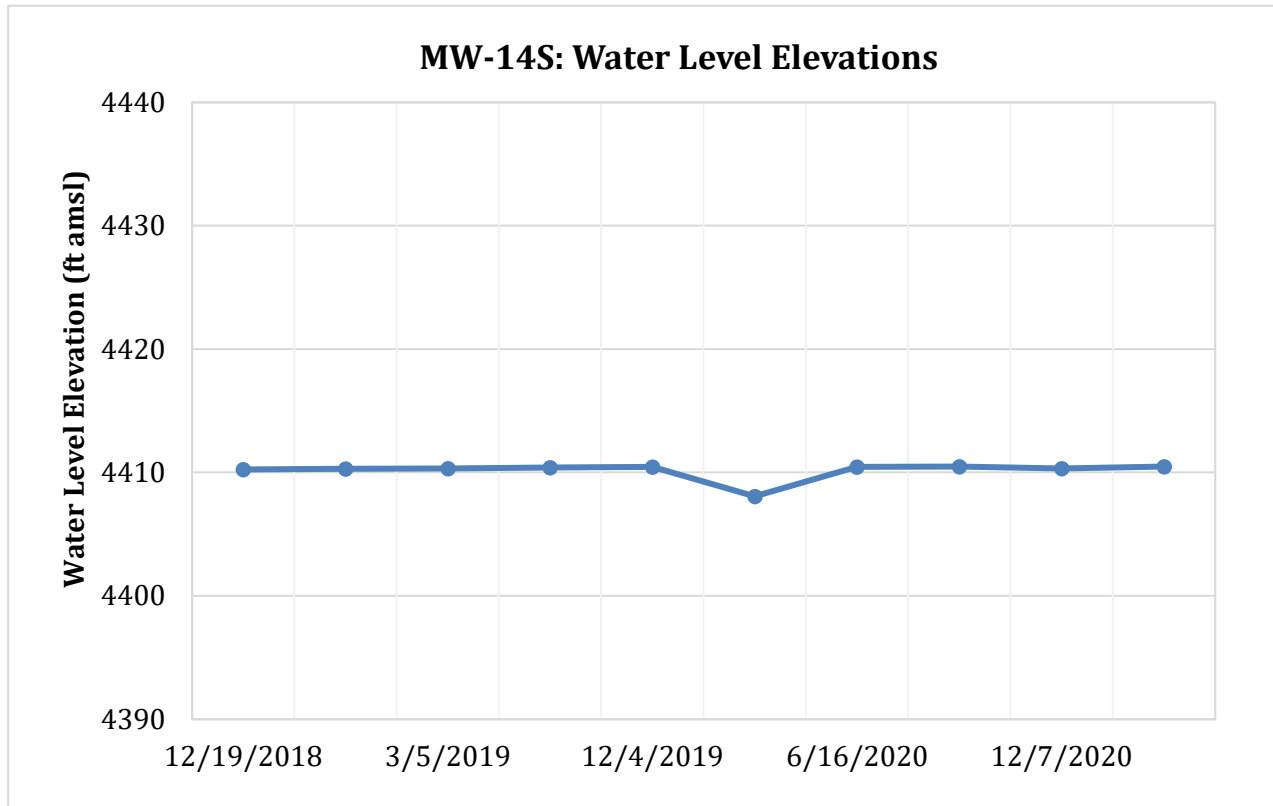


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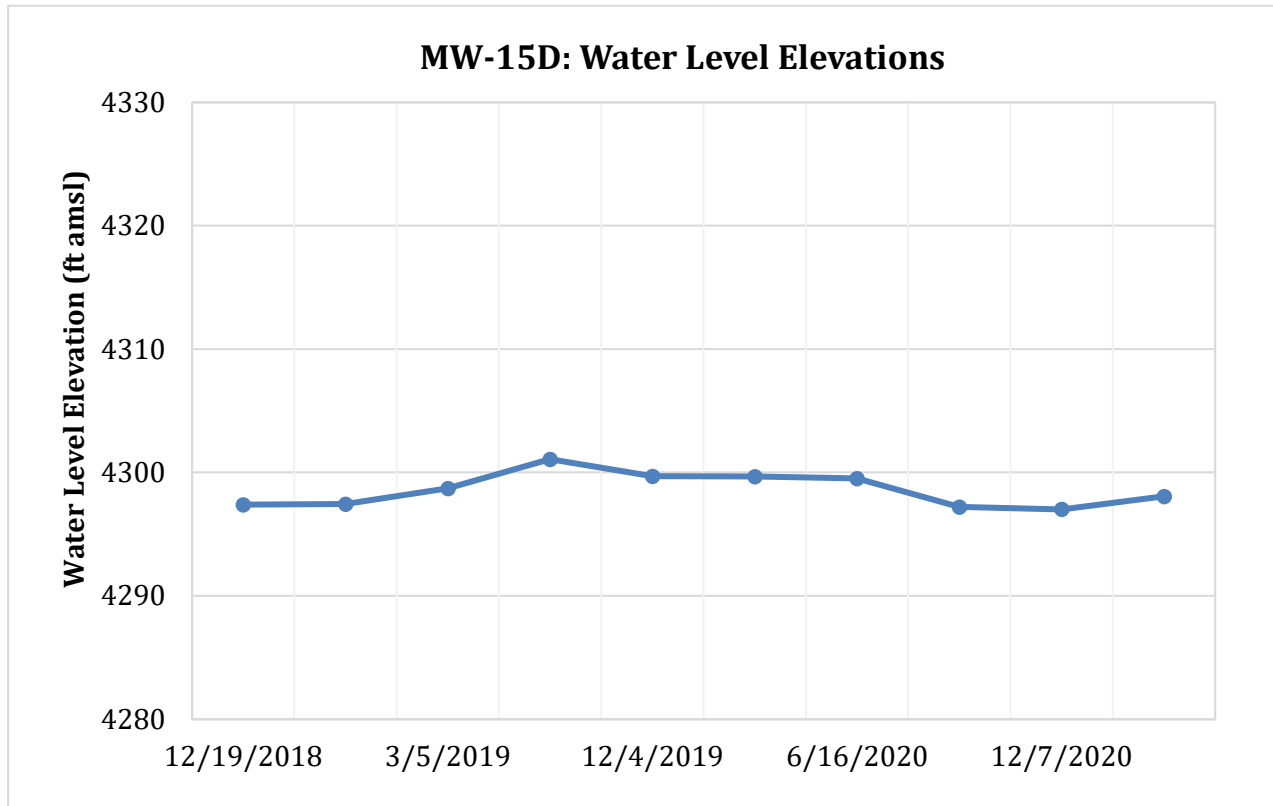




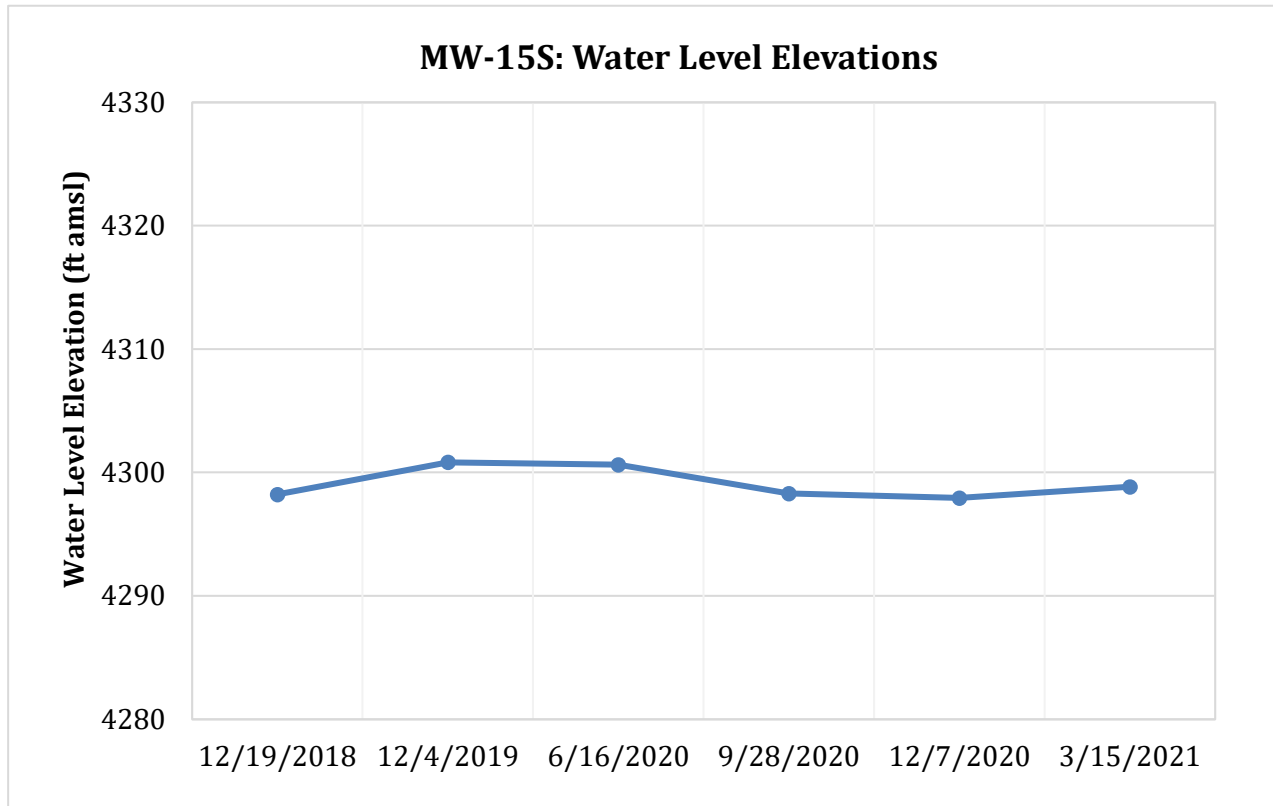
**Appendix G**  
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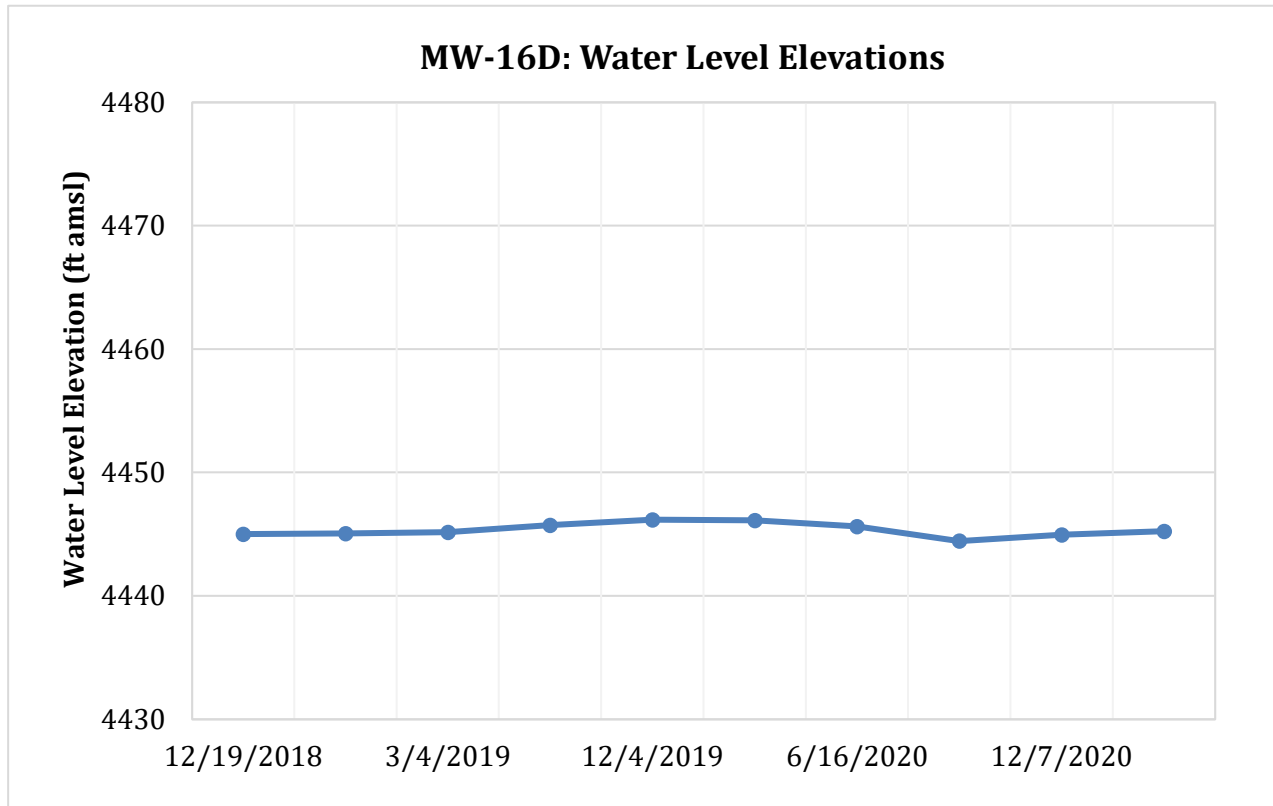
**Appendix G**  
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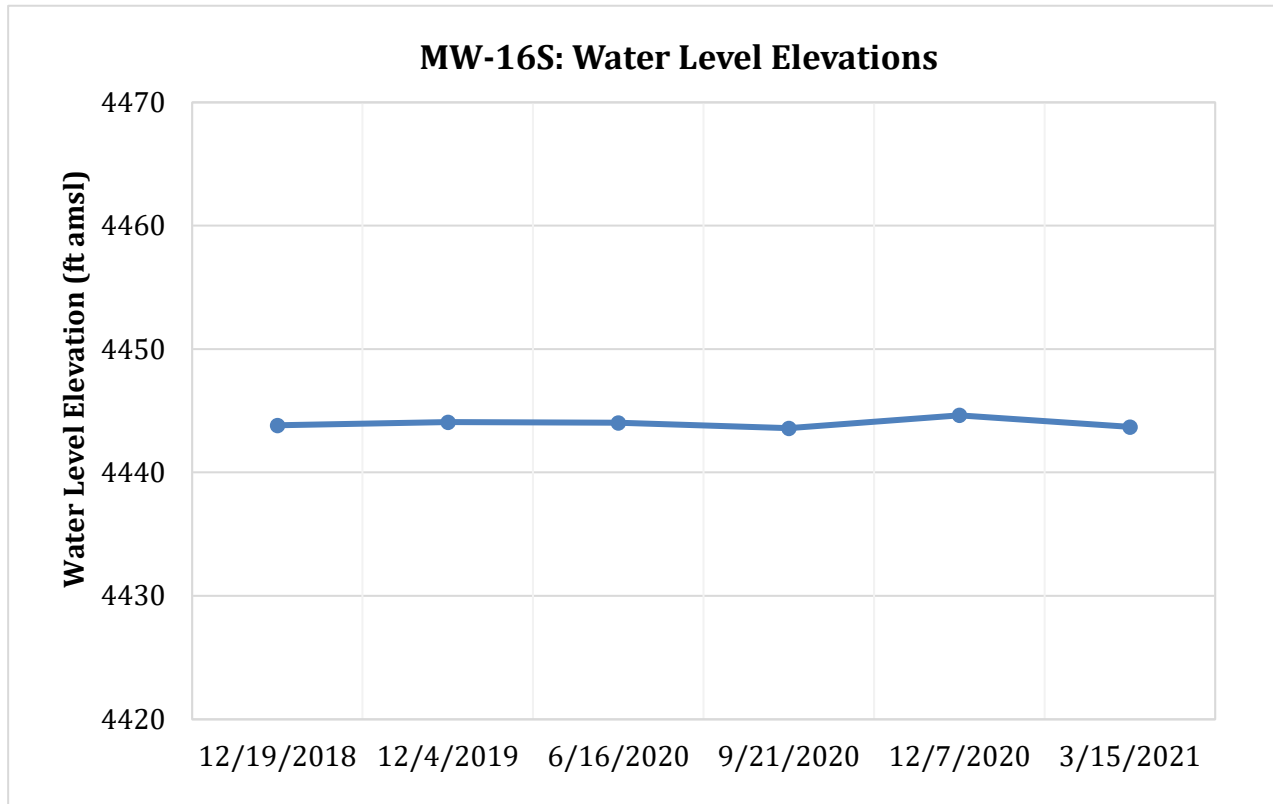
**Appendix G**  
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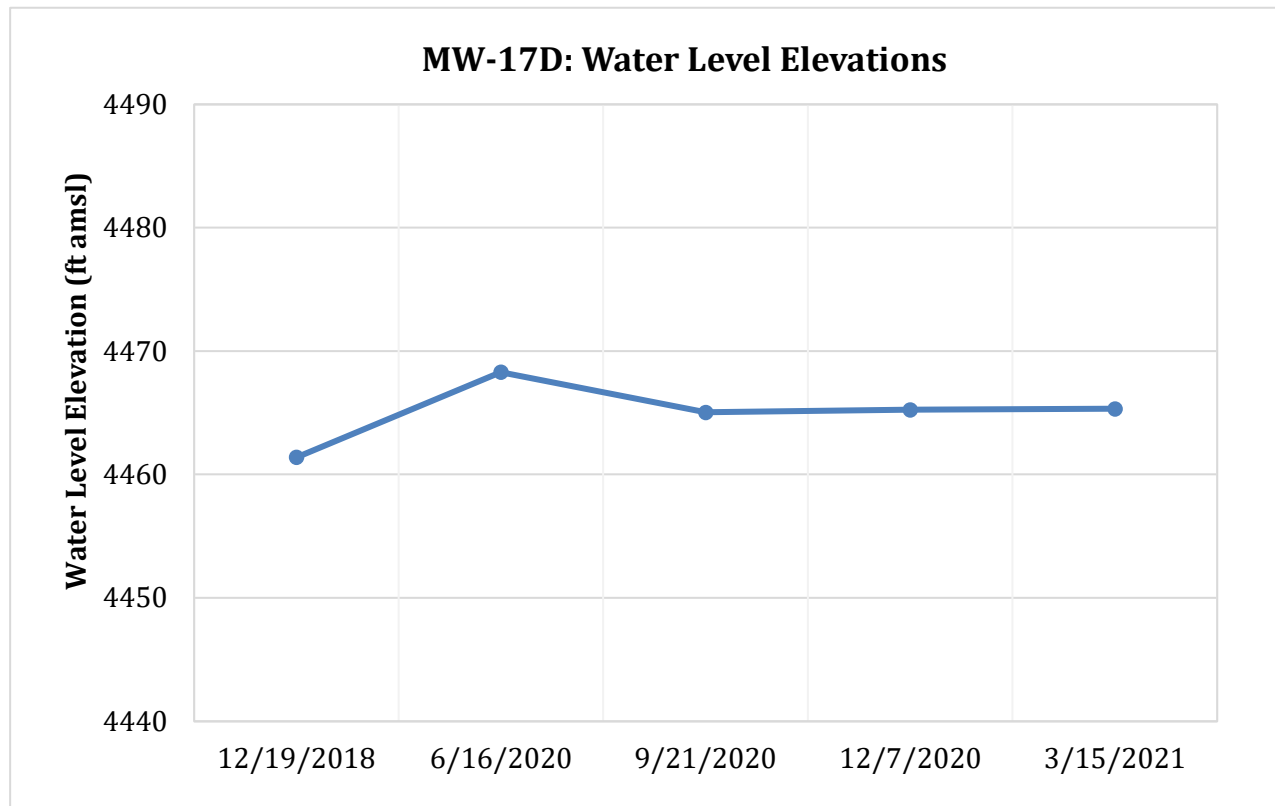
**Appendix G**  
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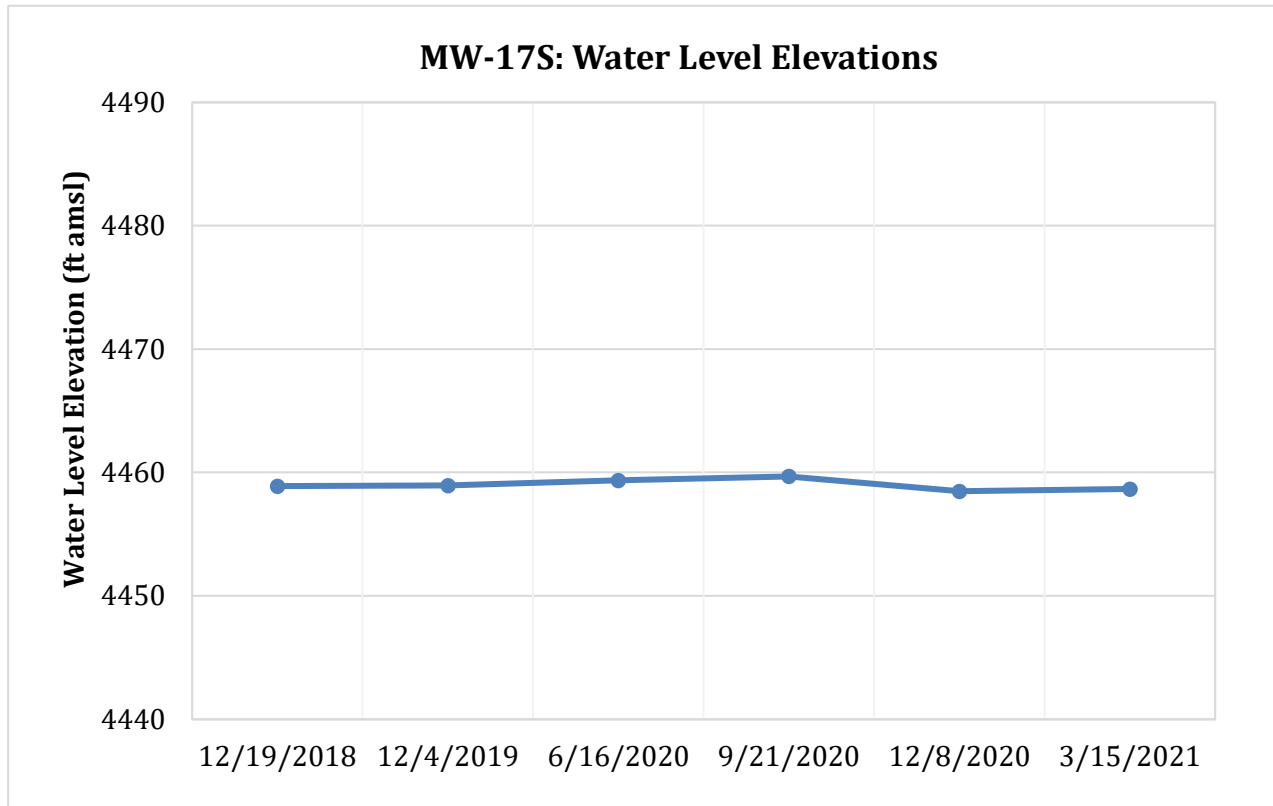
**Appendix G**  
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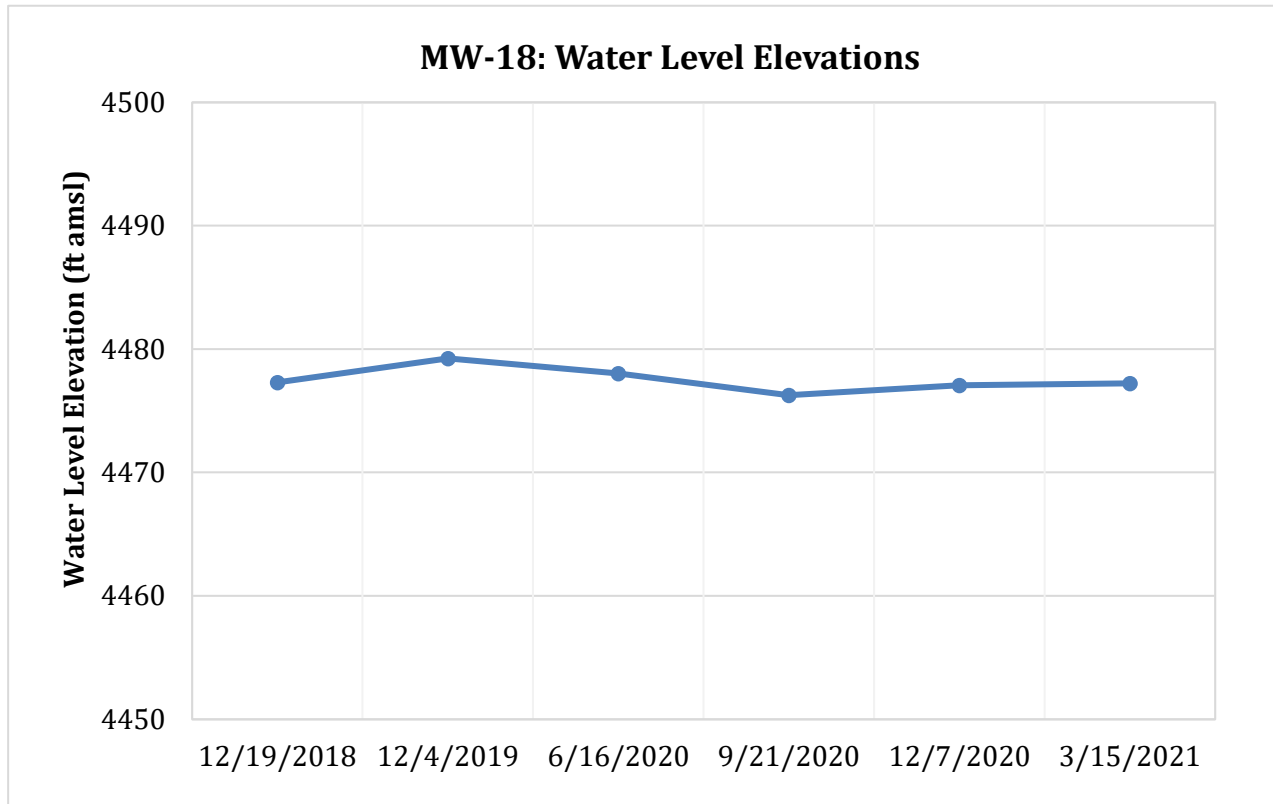
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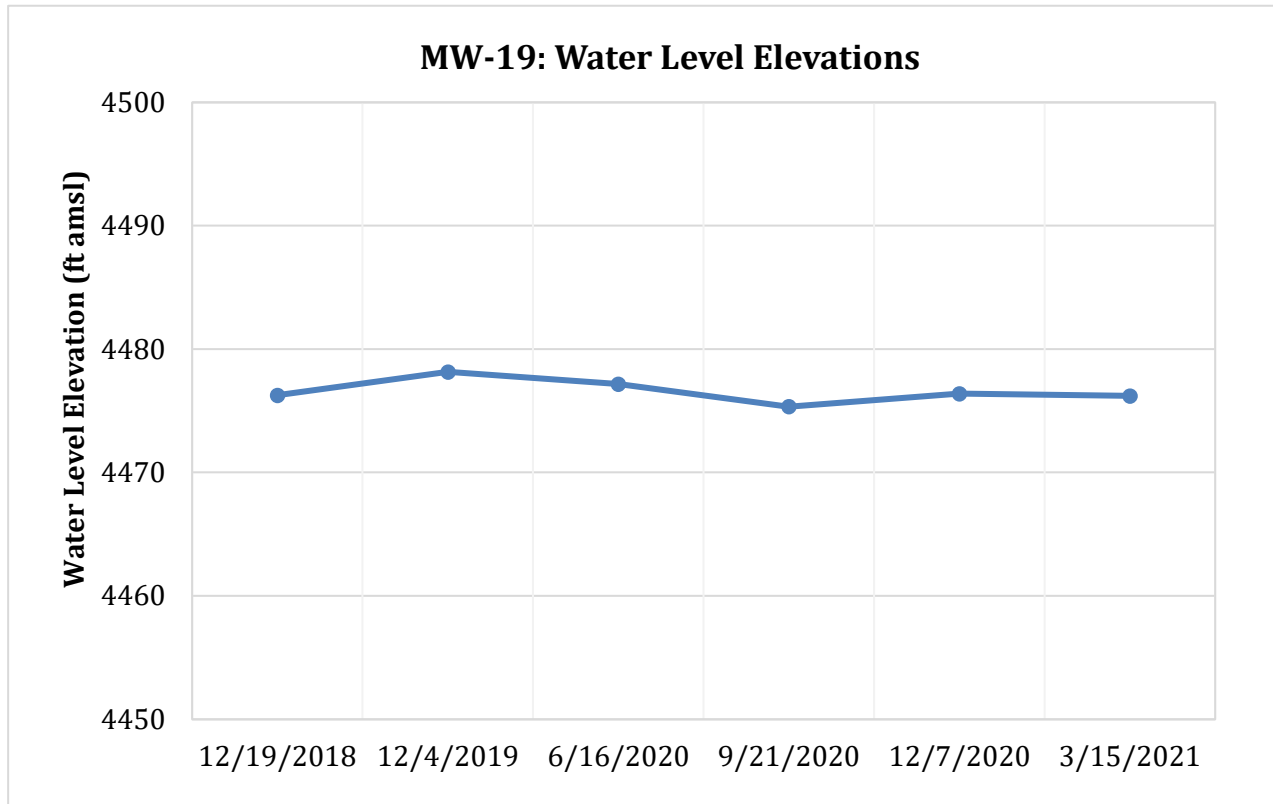


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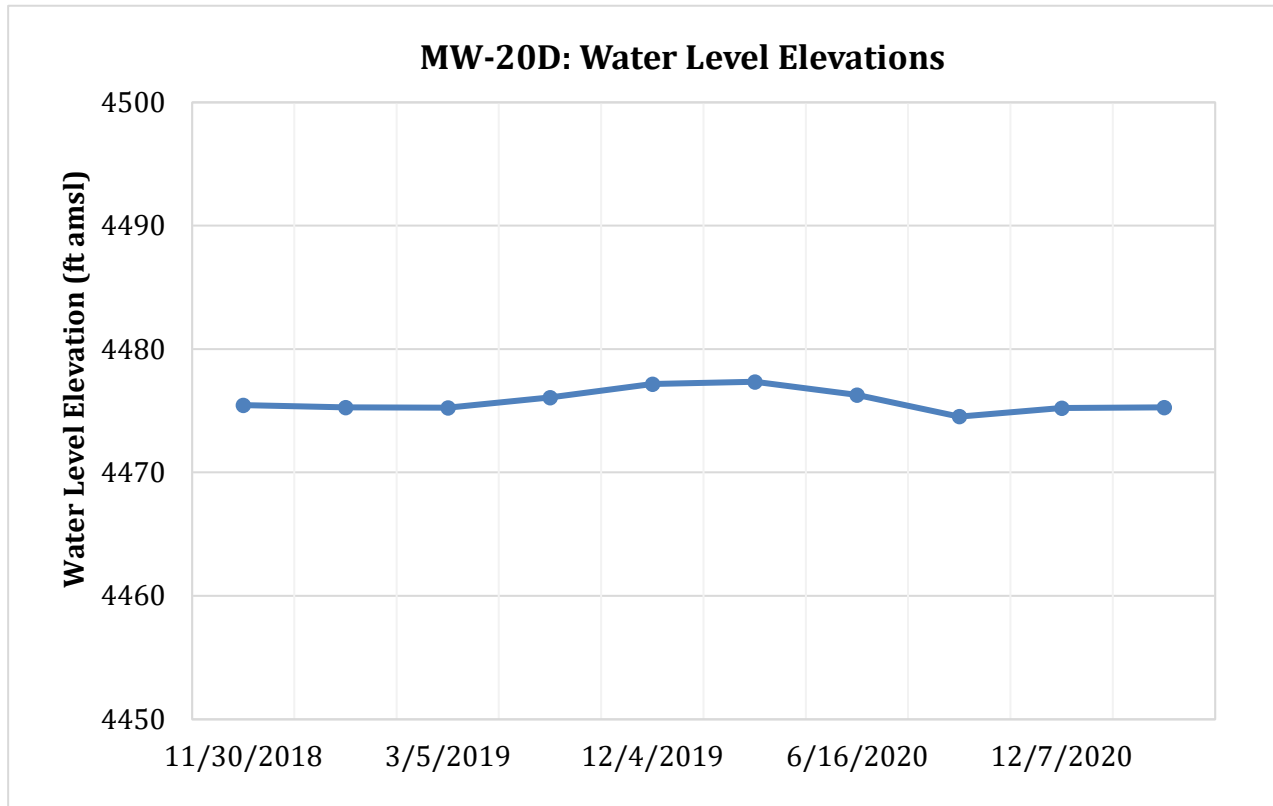




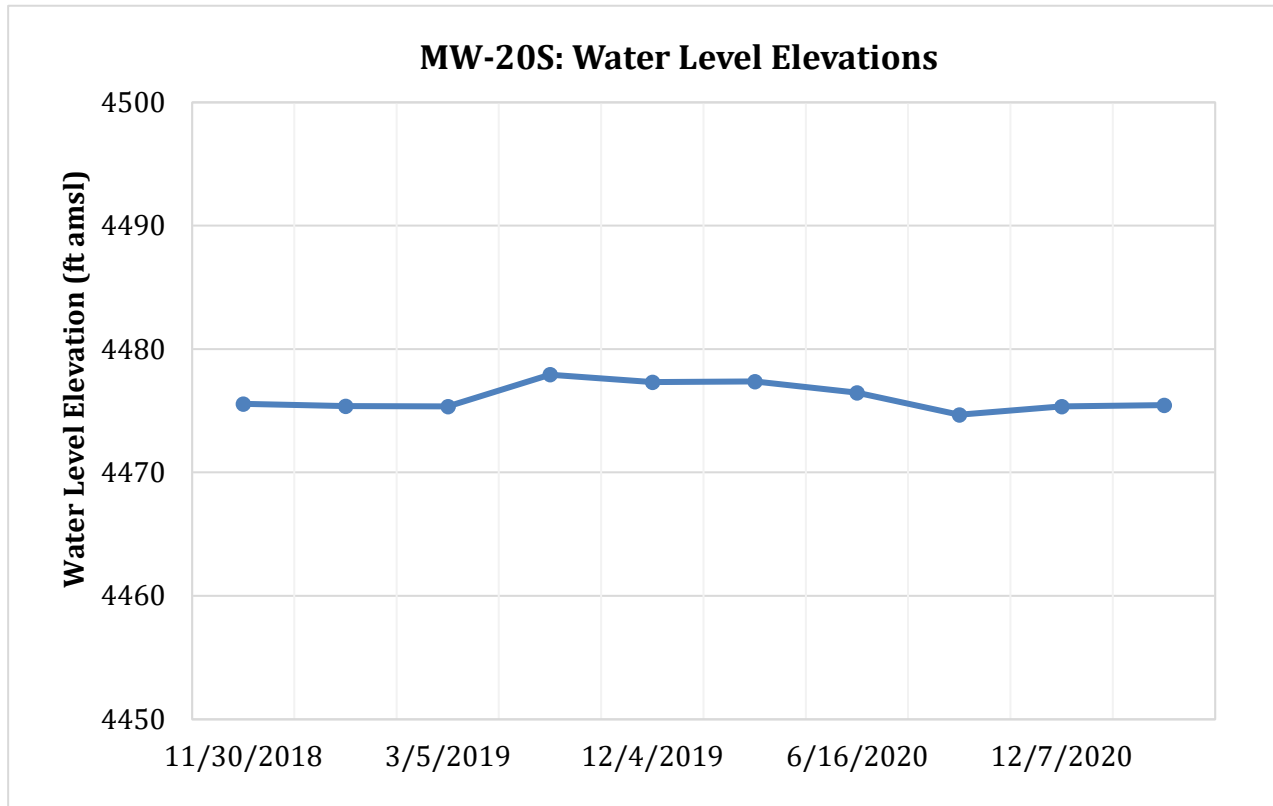
**Appendix G**  
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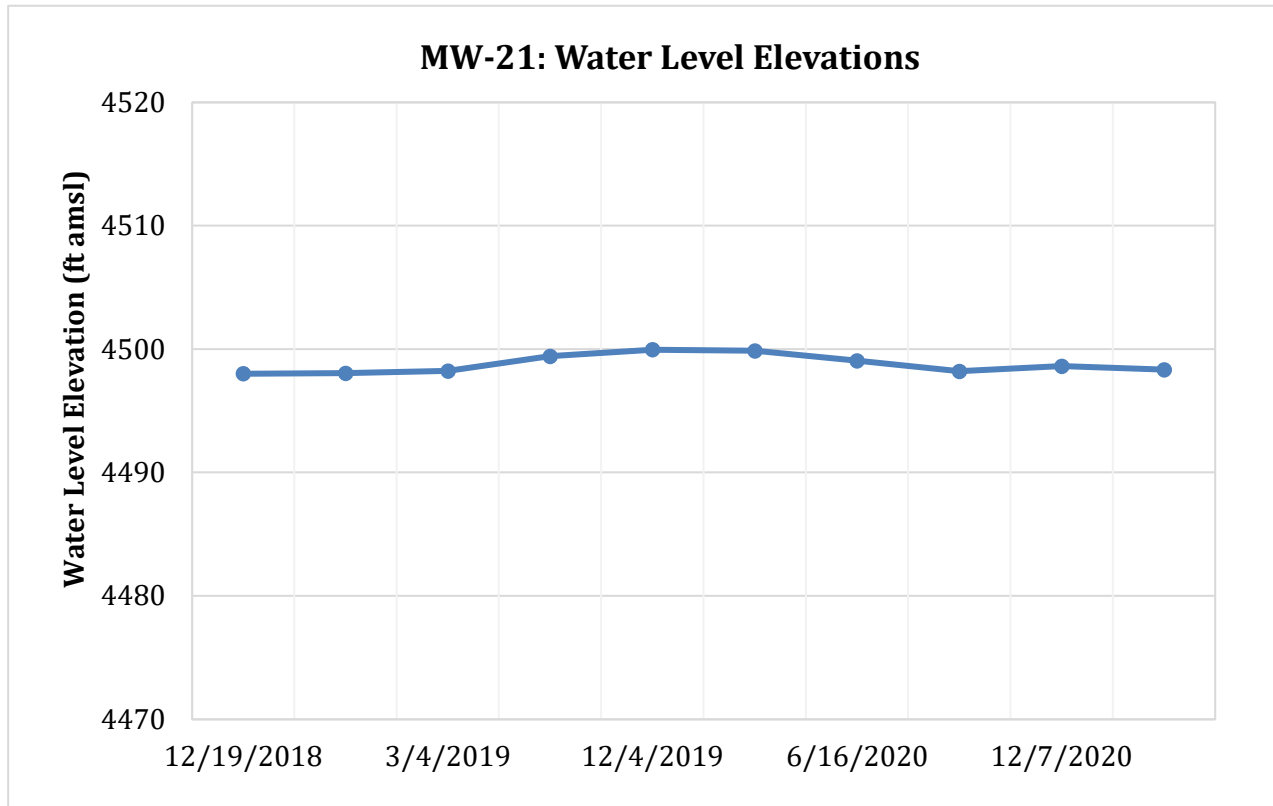
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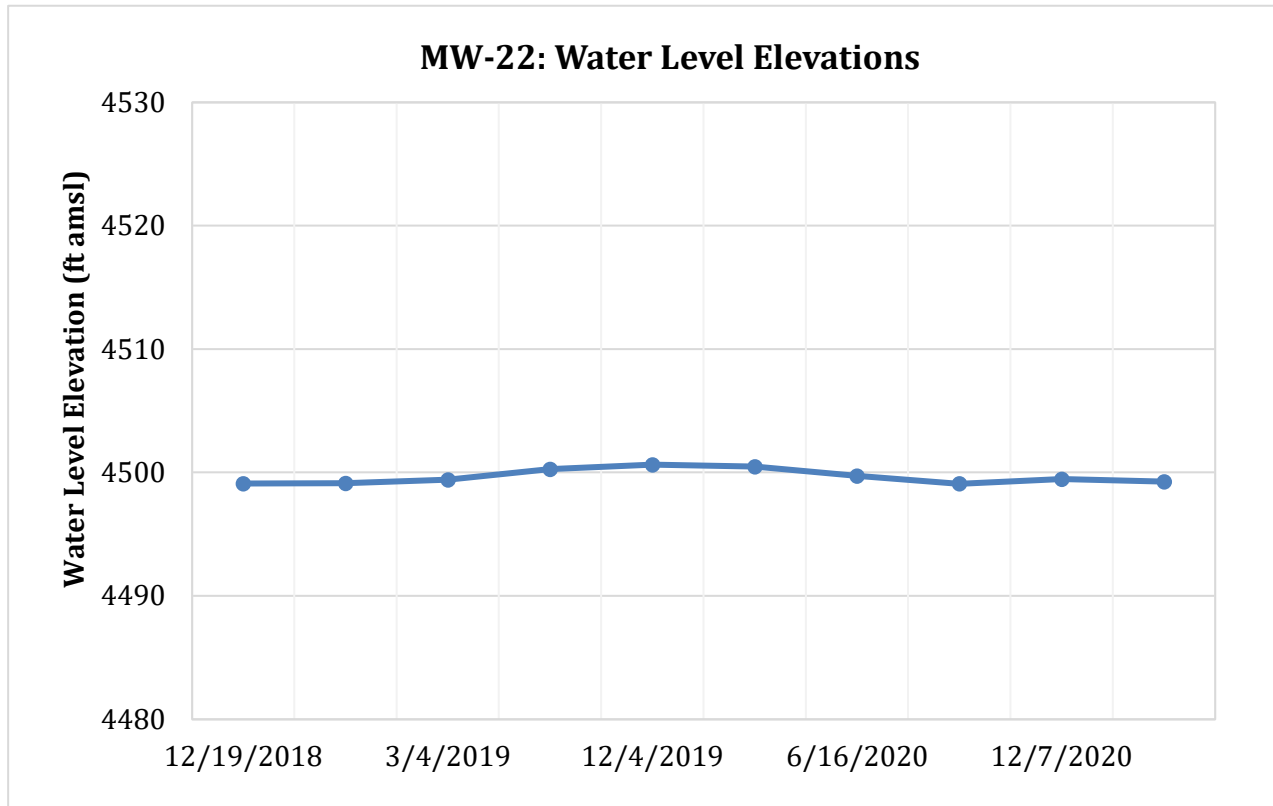
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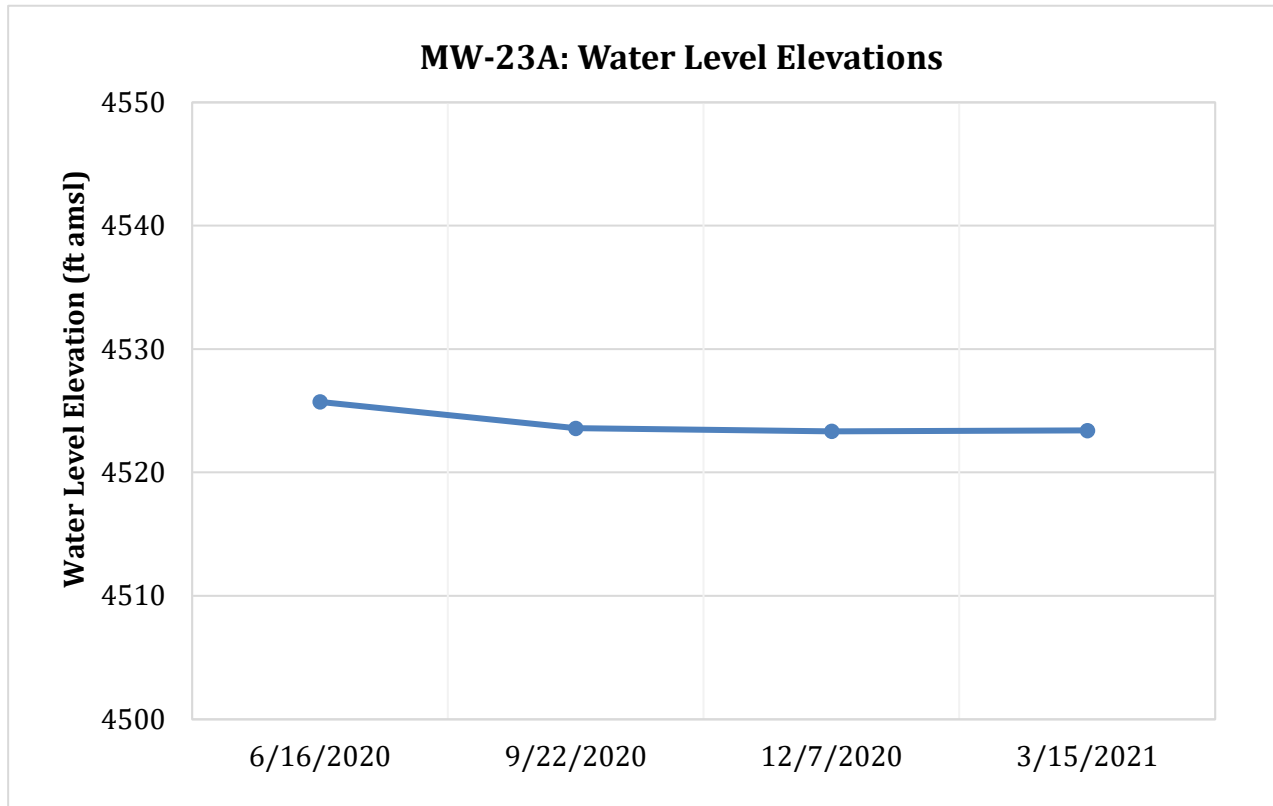
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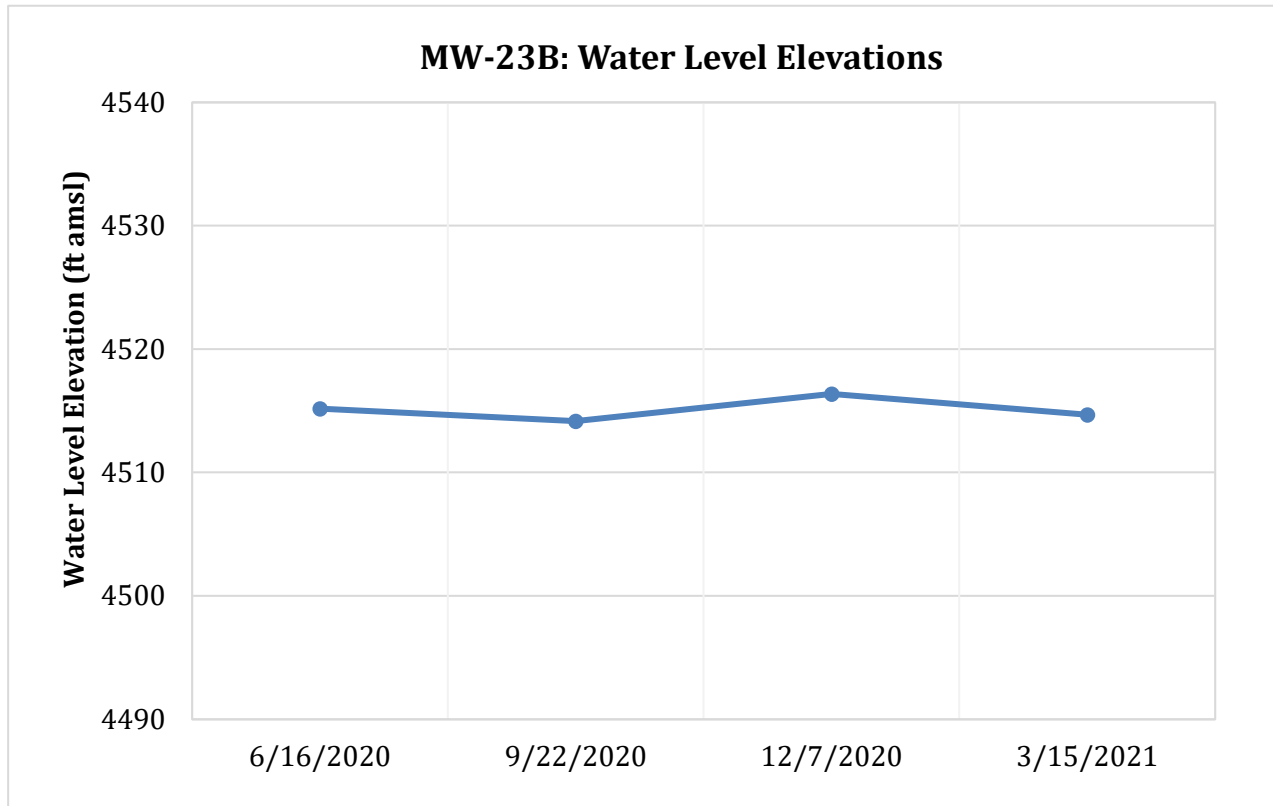
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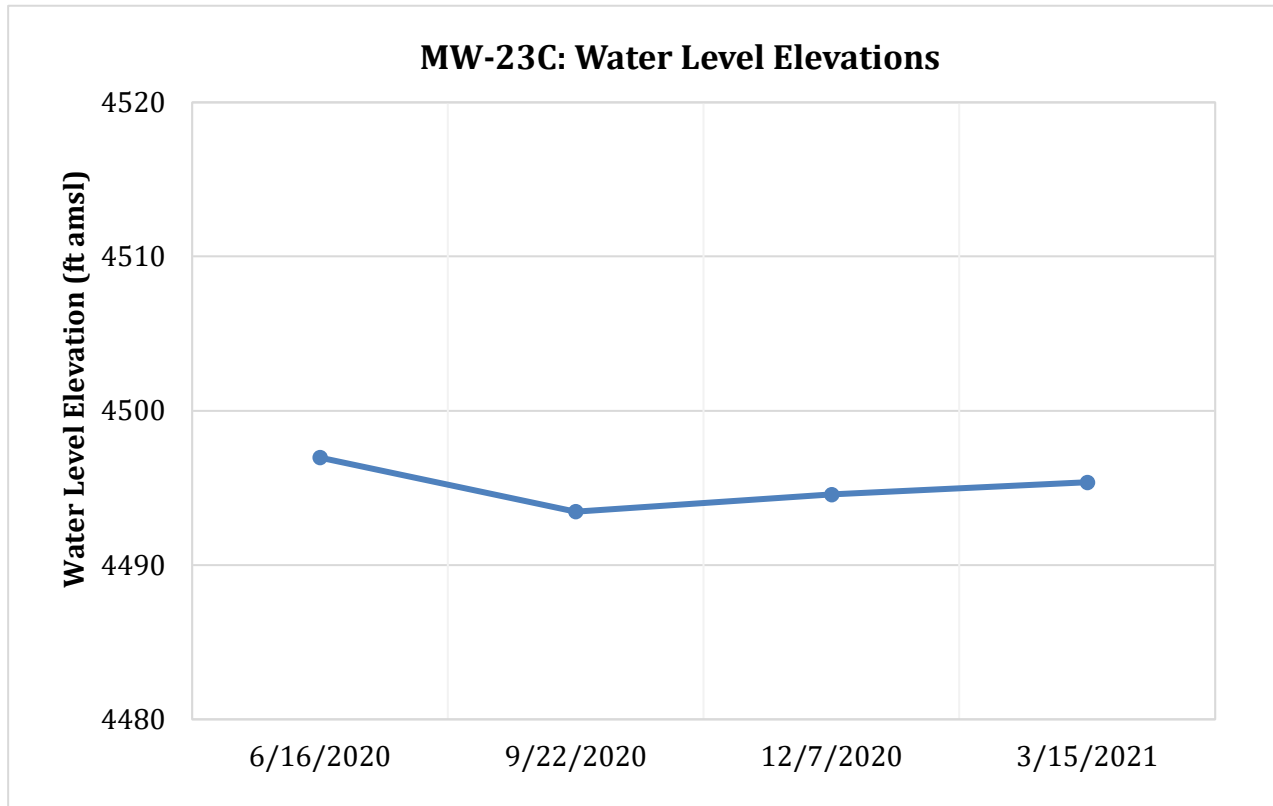
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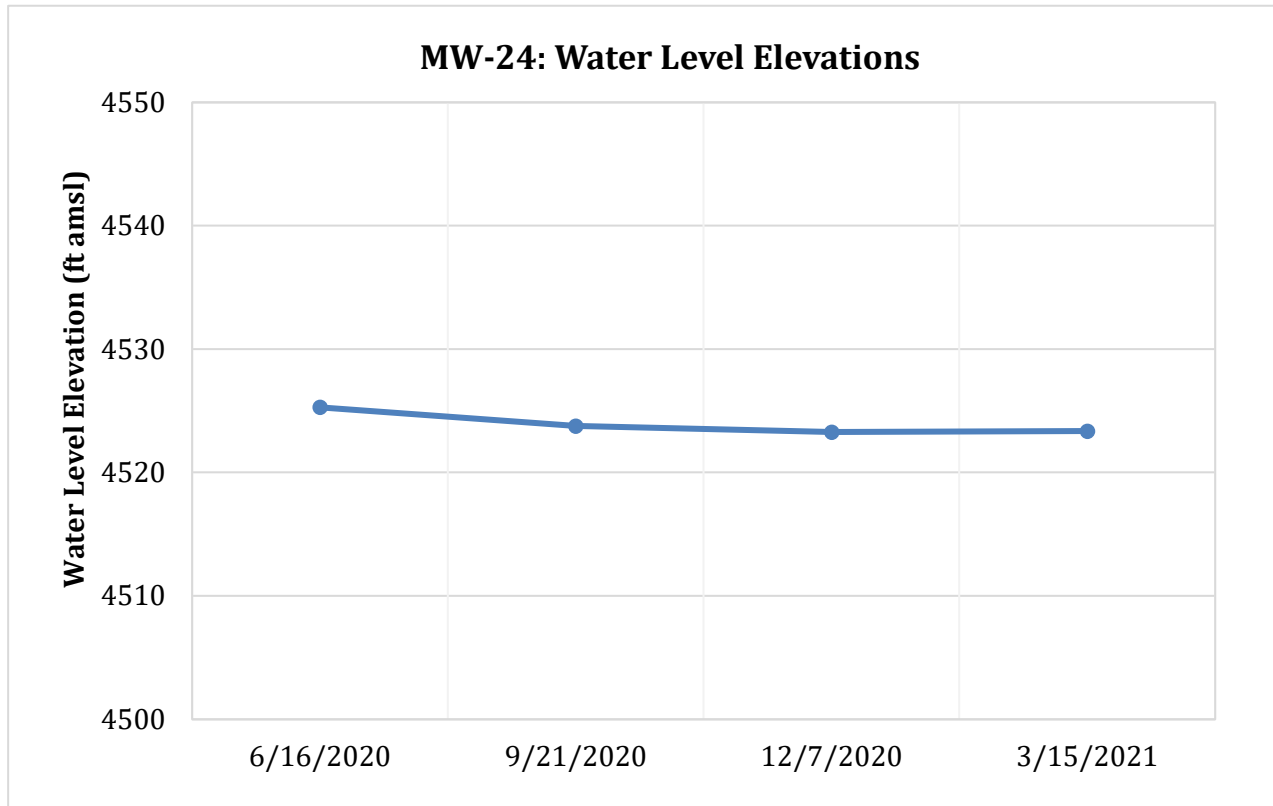


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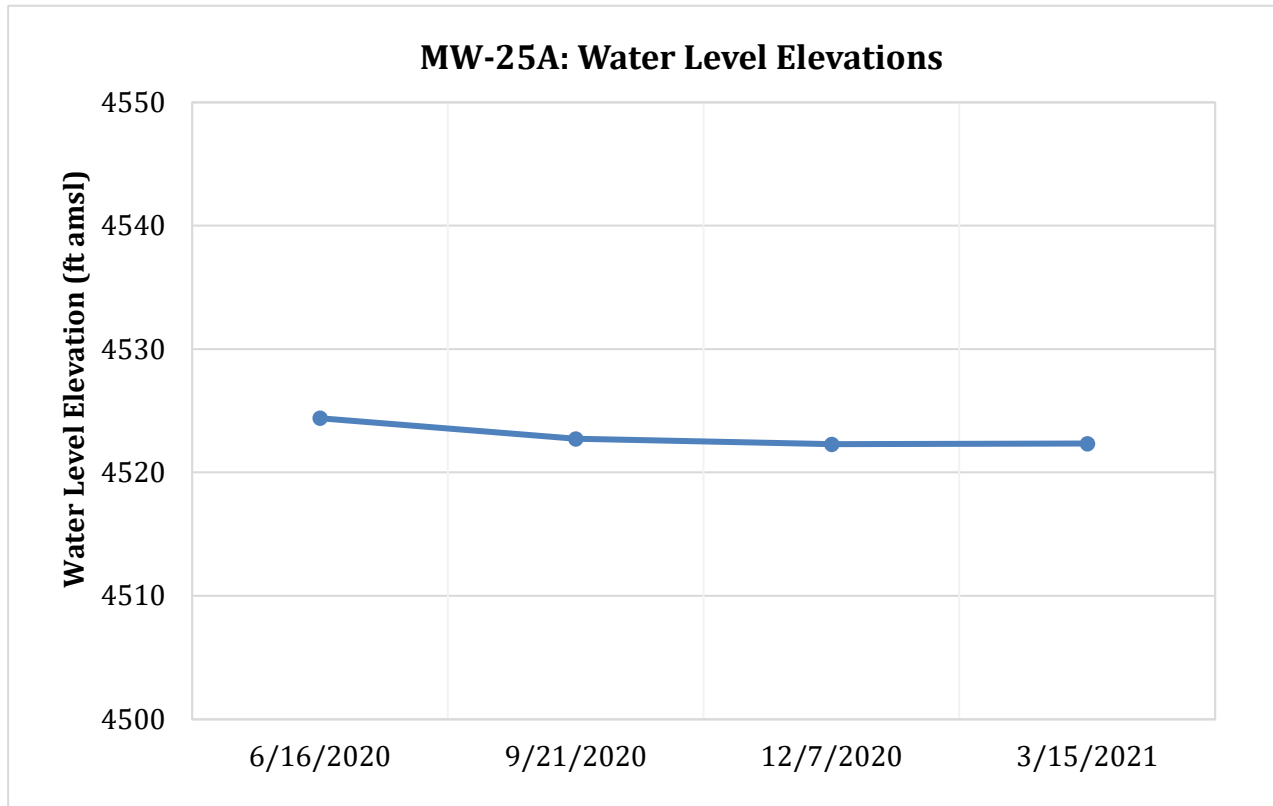




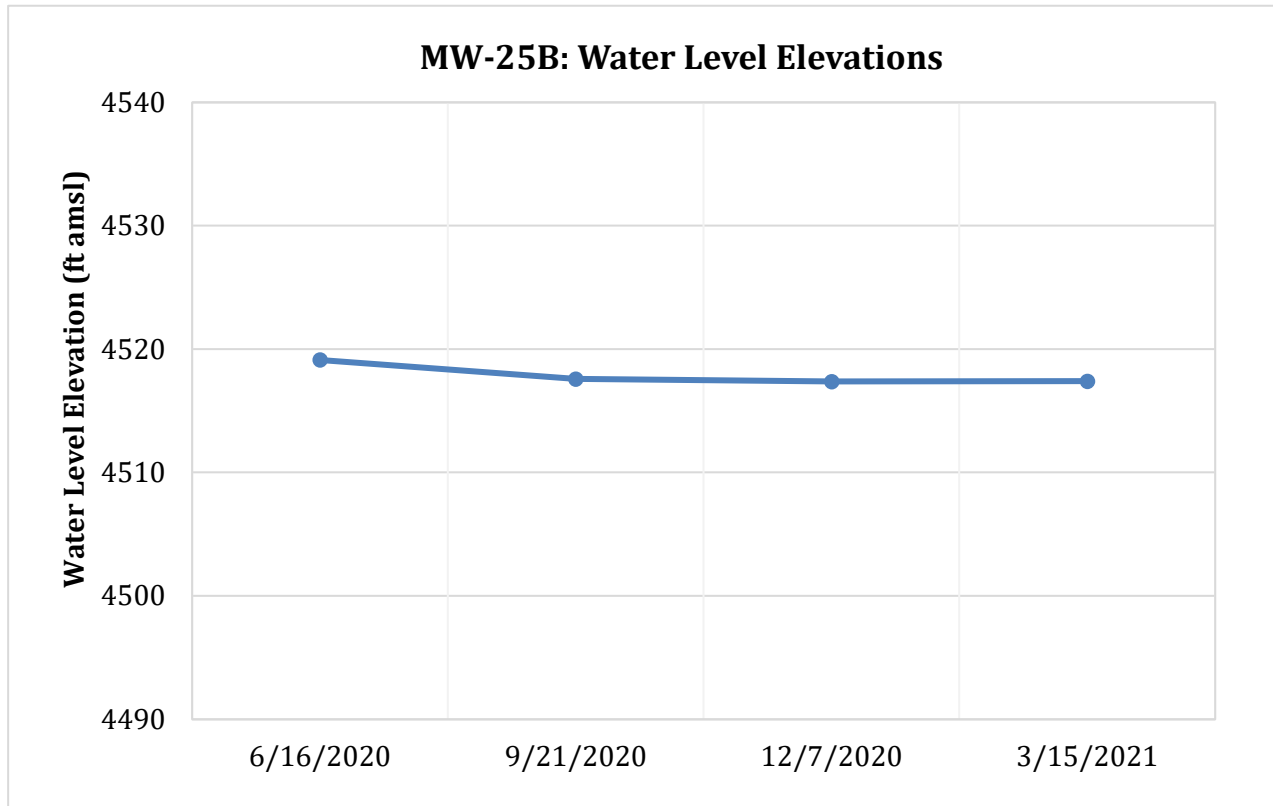
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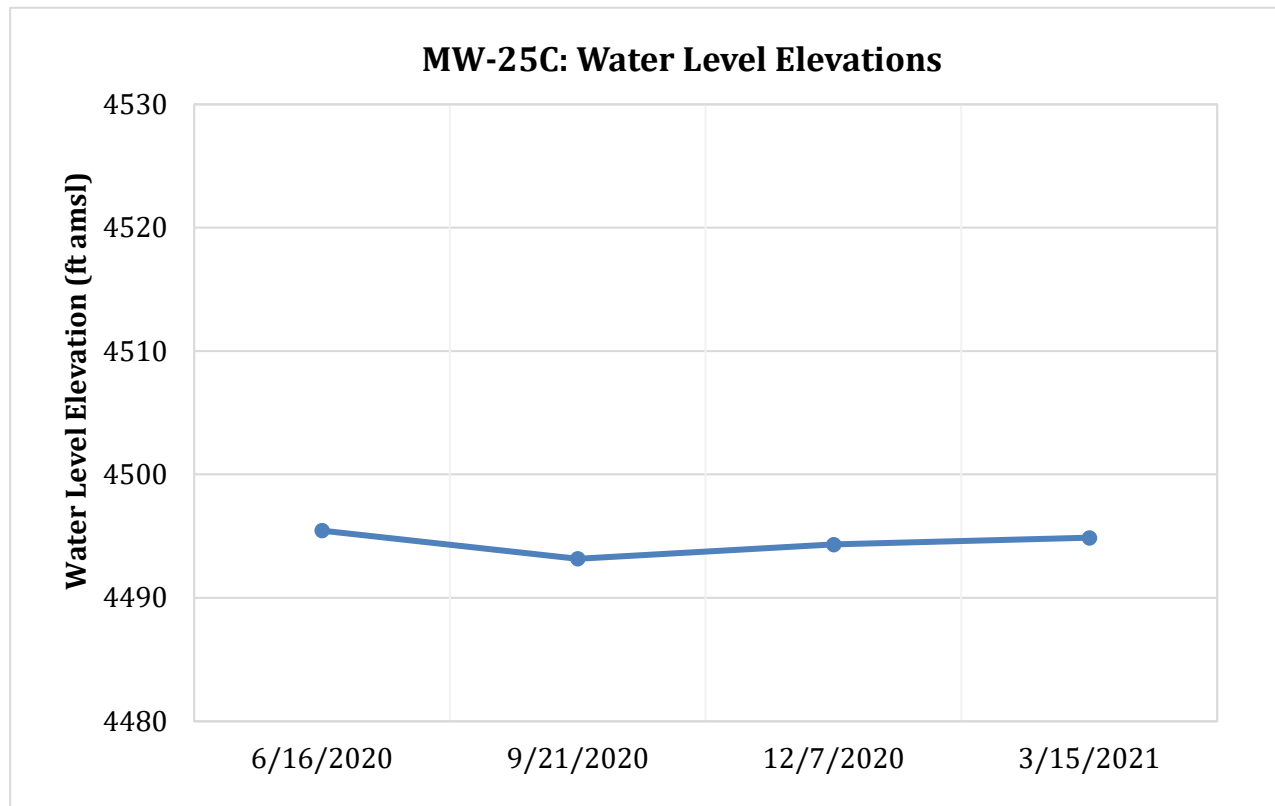
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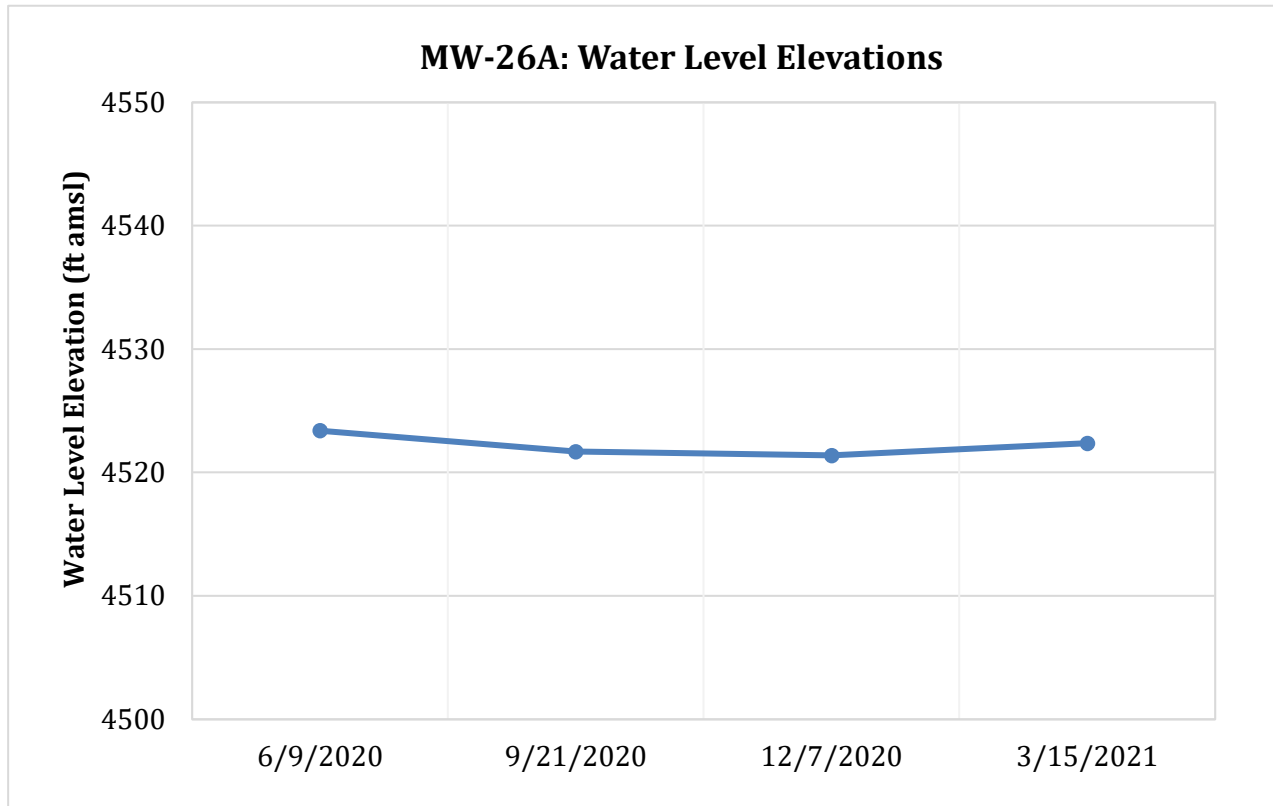
**Appendix G**  
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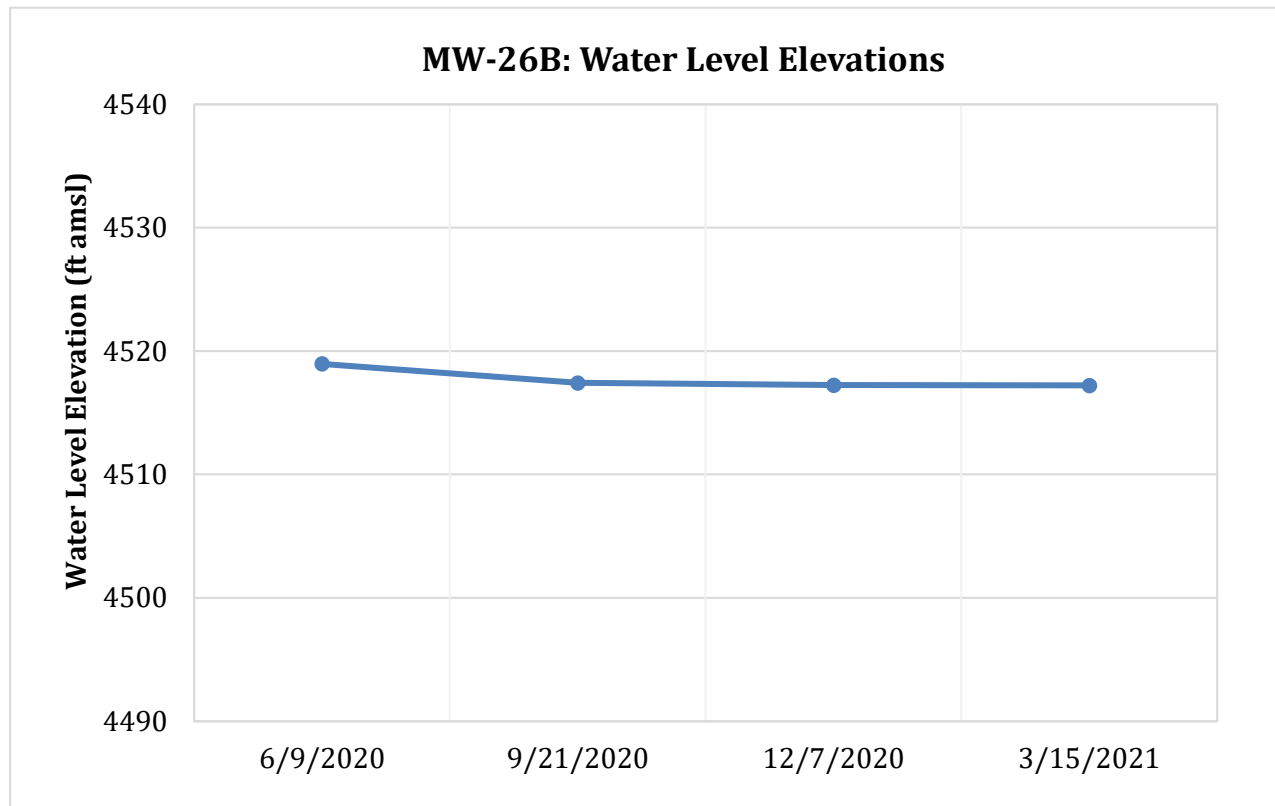
**Appendix G**  
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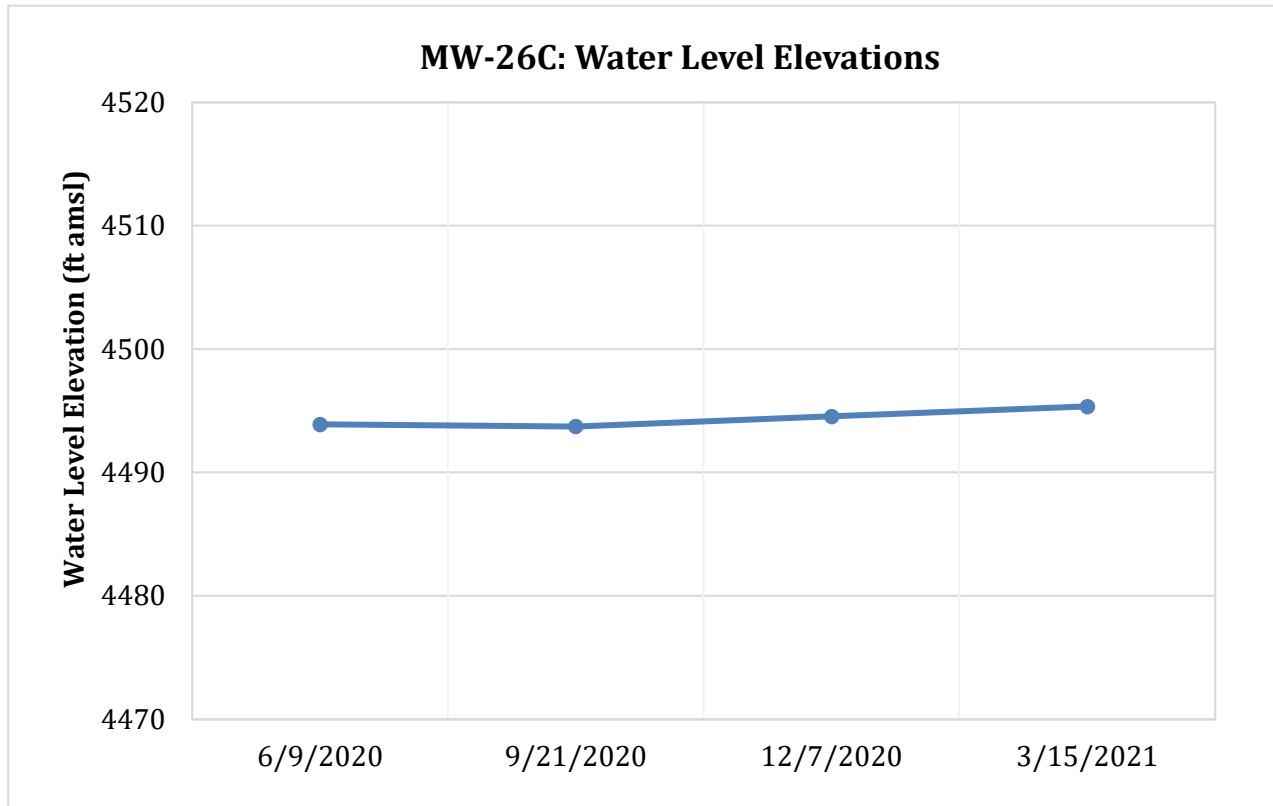
**Appendix G**  
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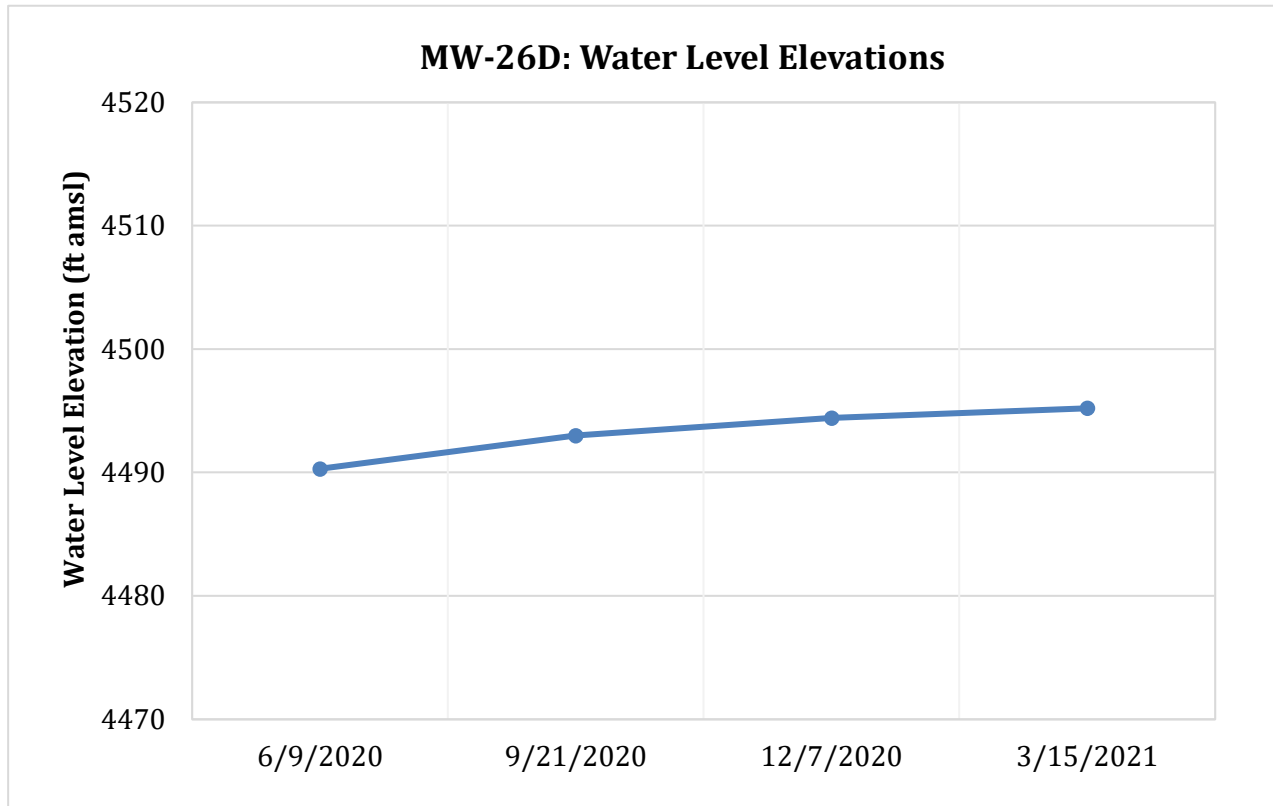
**Appendix G**  
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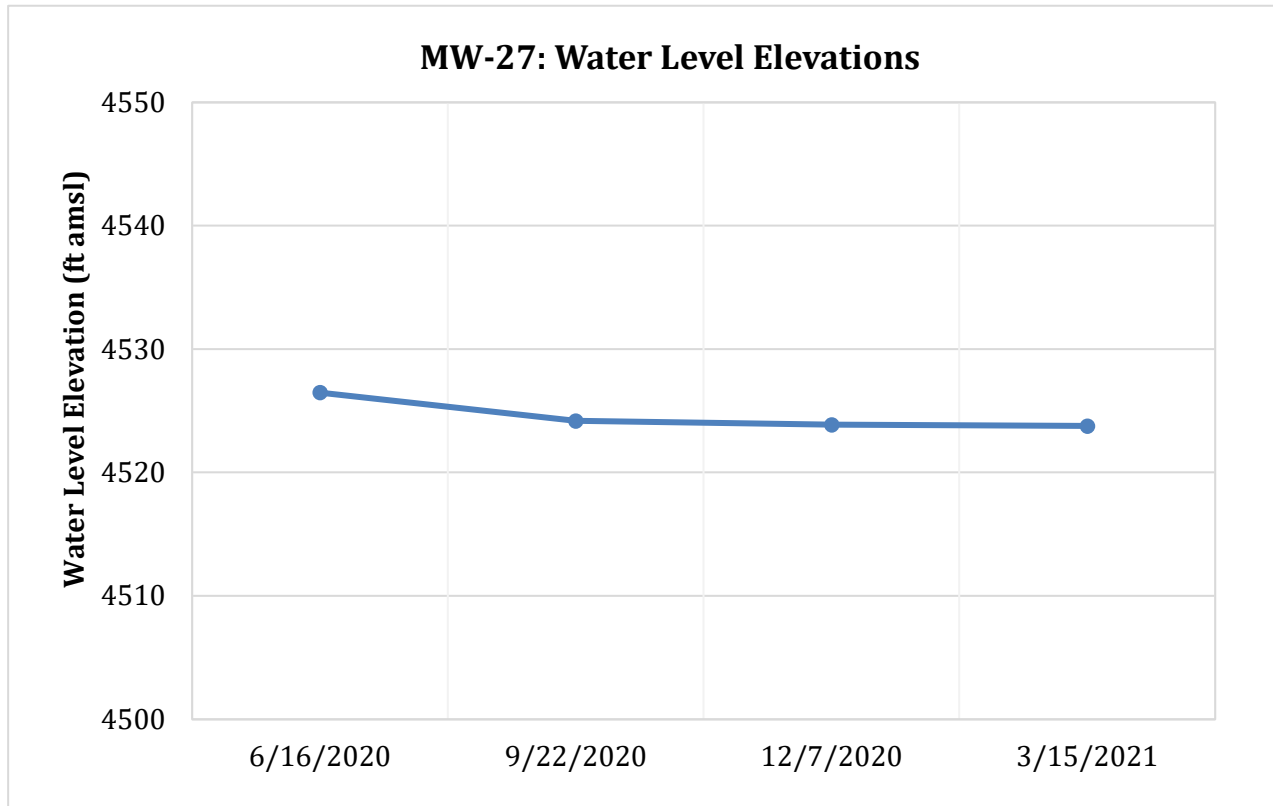


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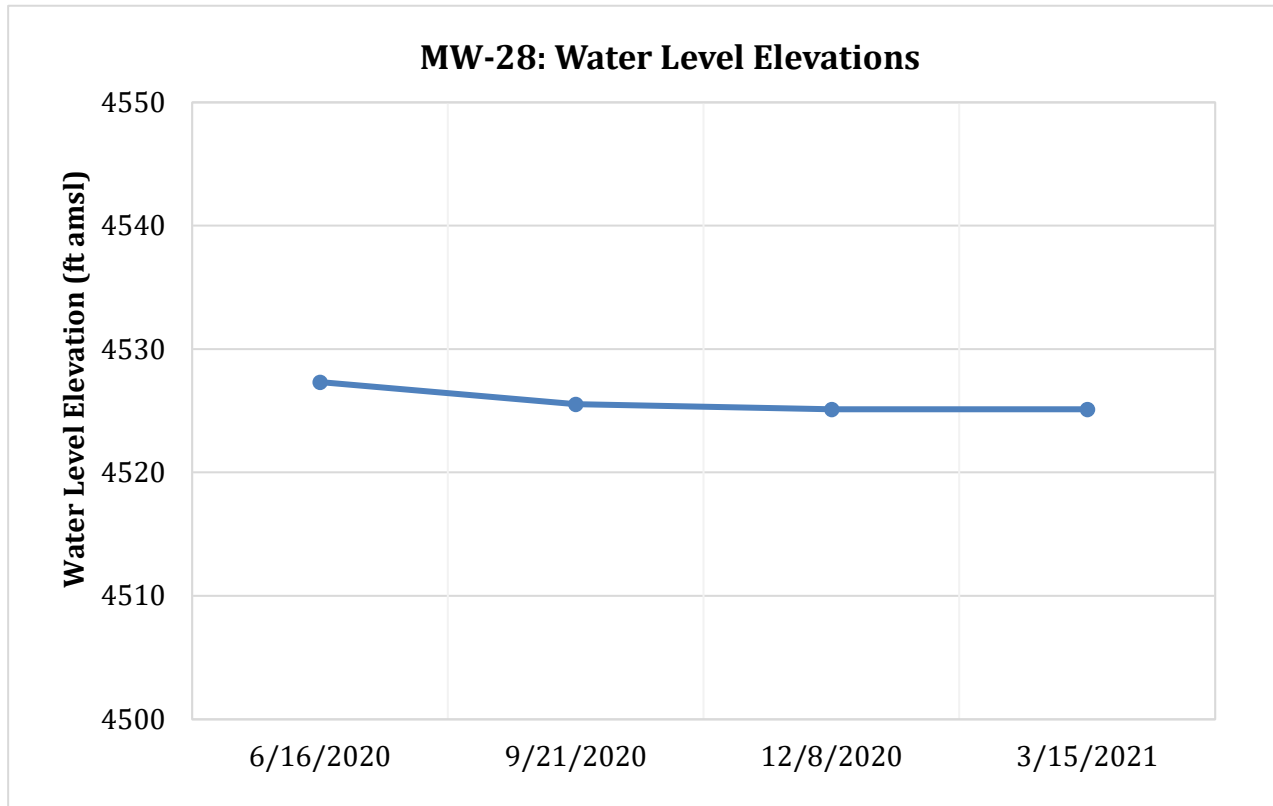




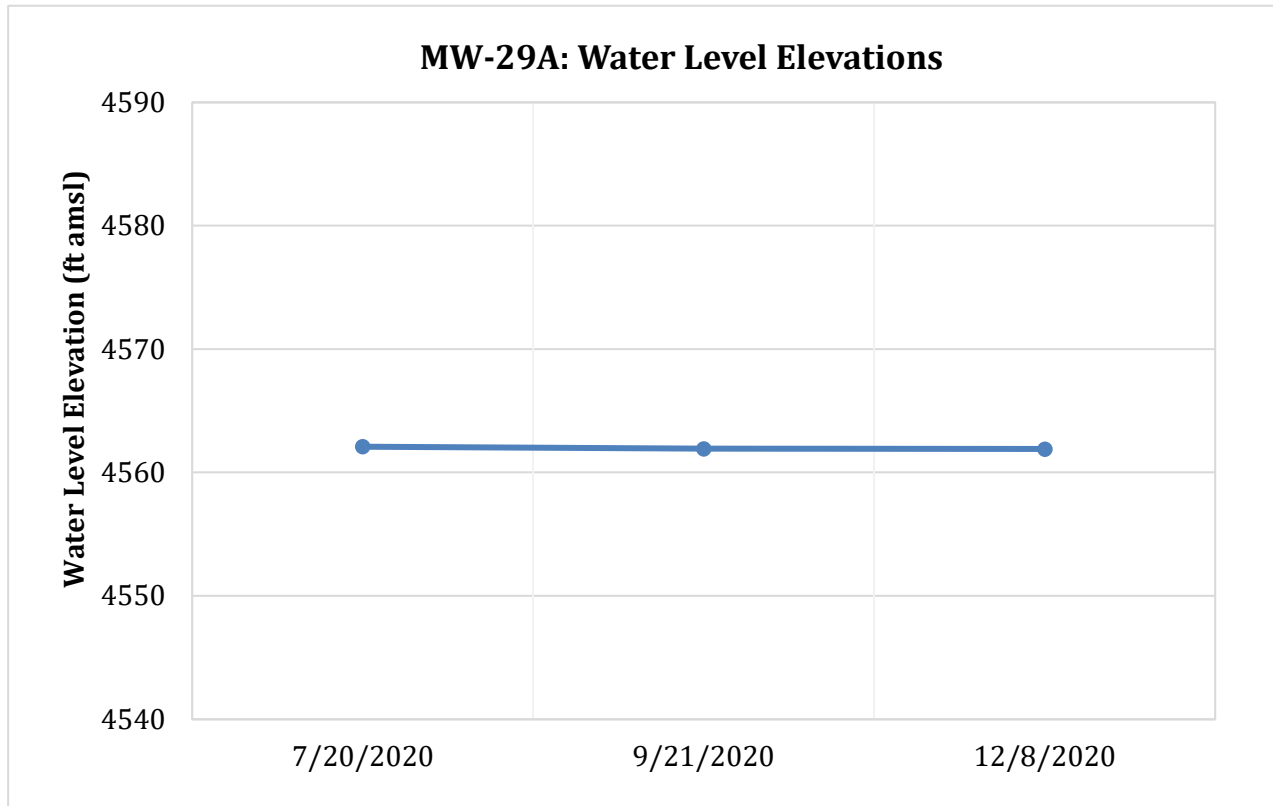
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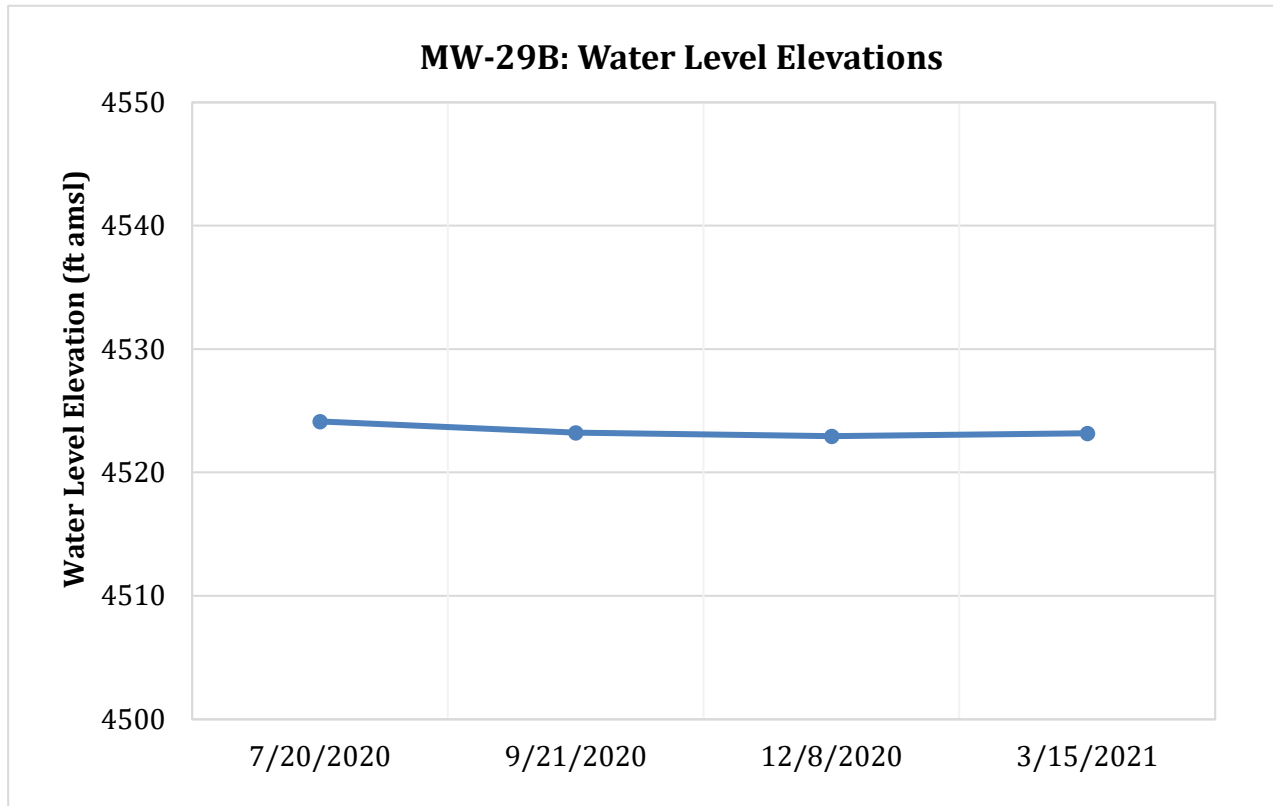
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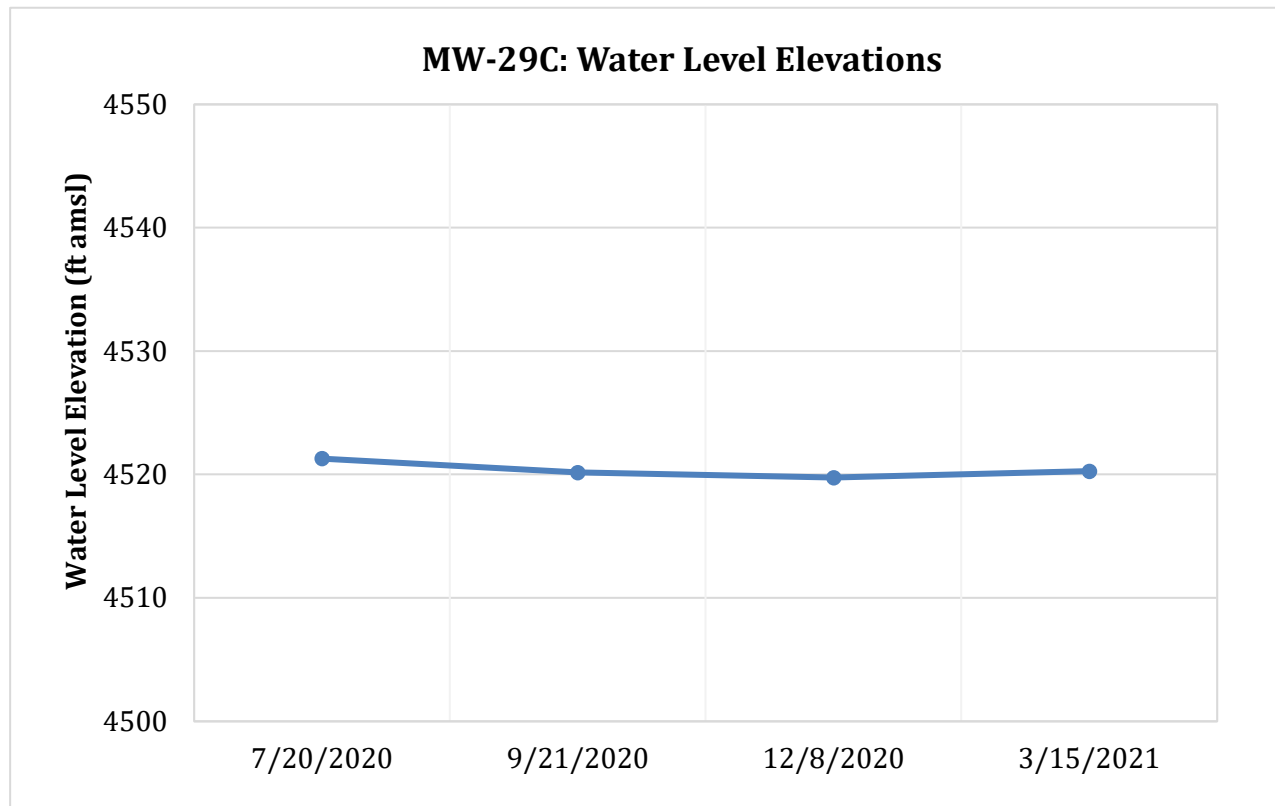
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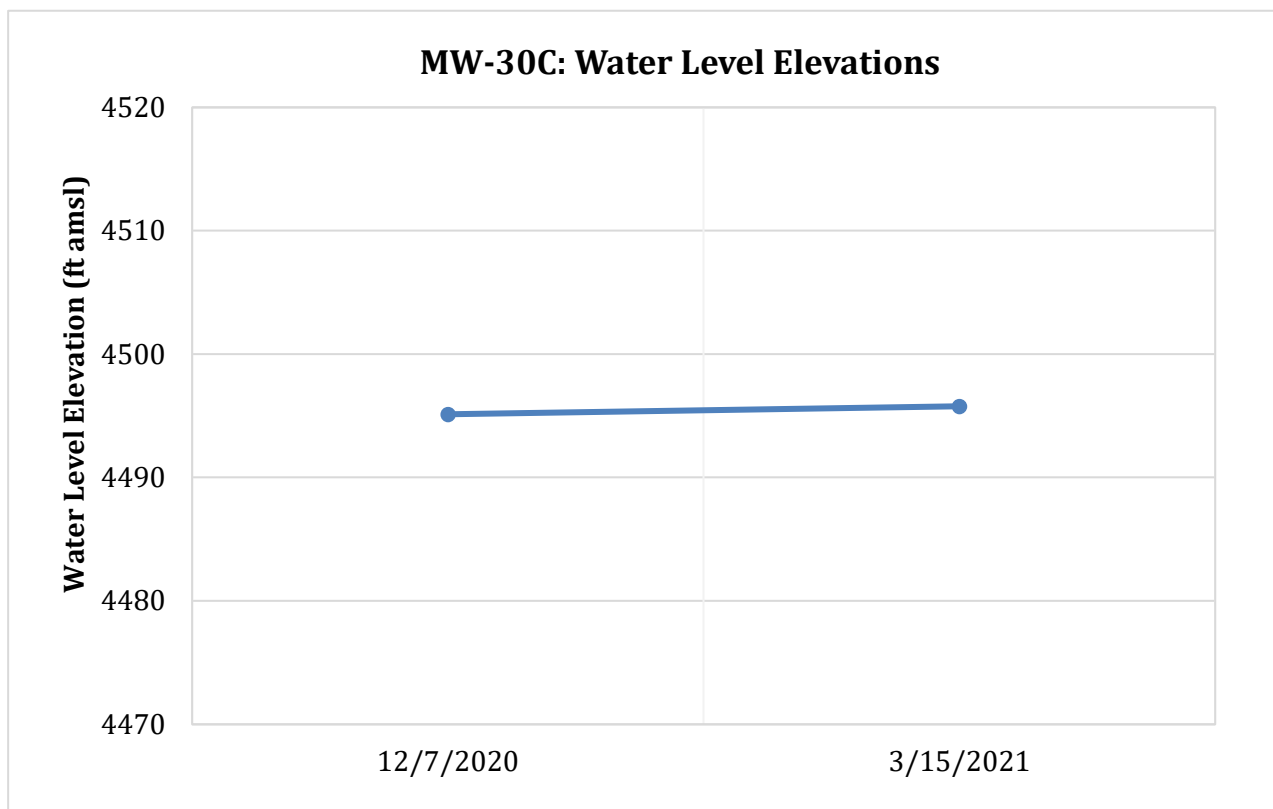
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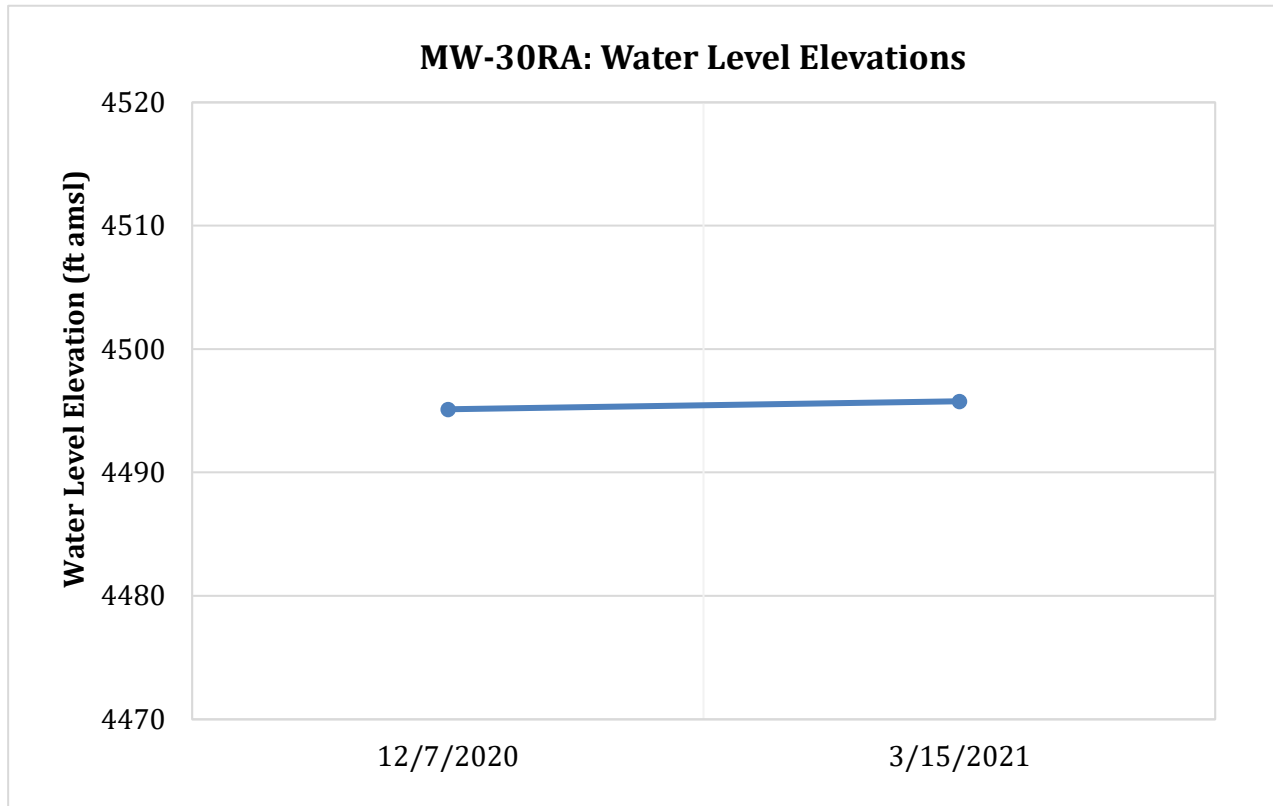
**Appendix G  
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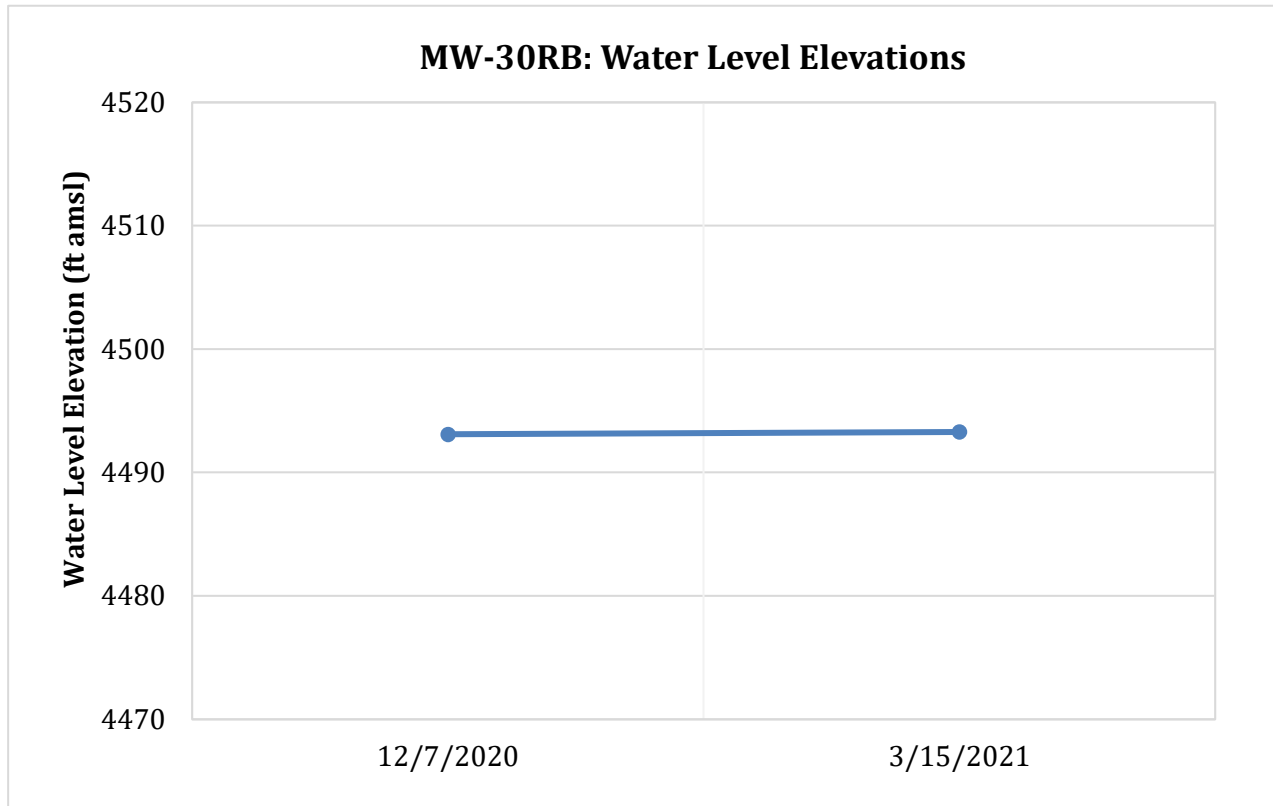
**Appendix G  
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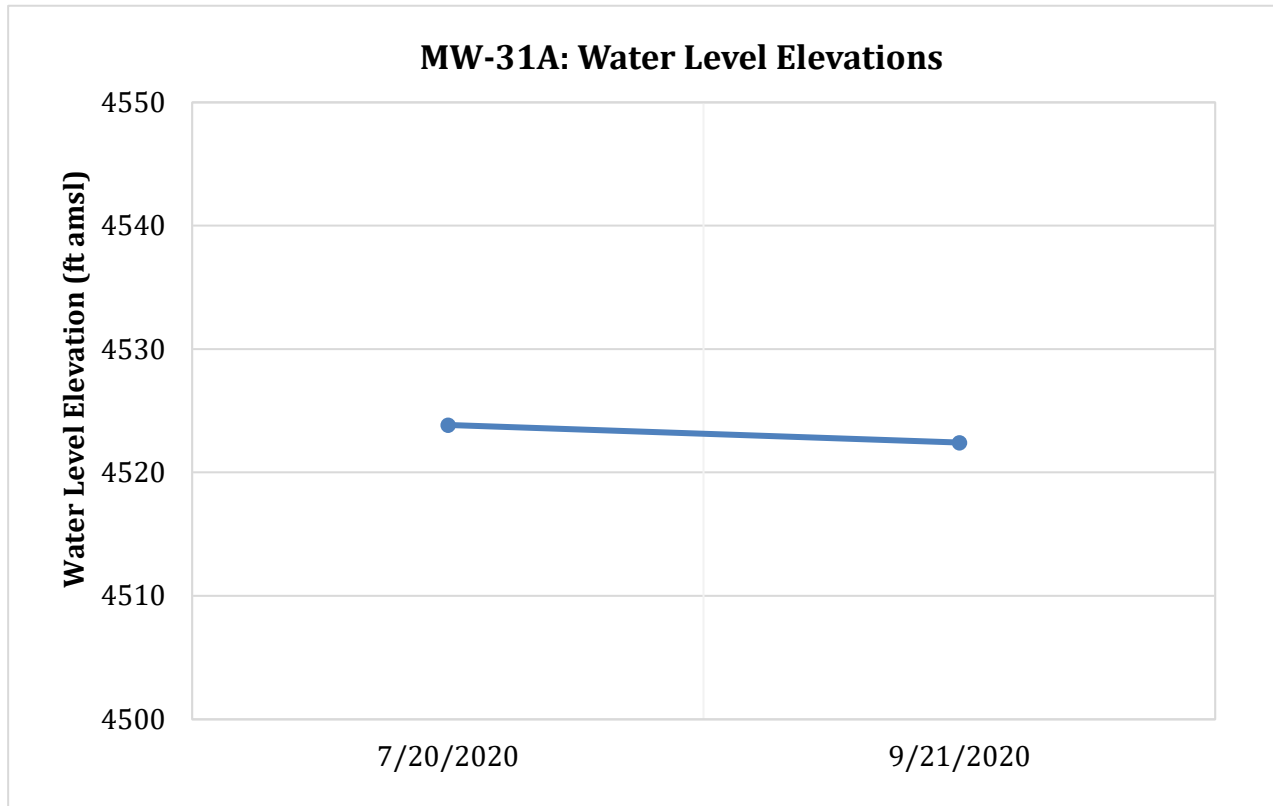


**Appendix G**  
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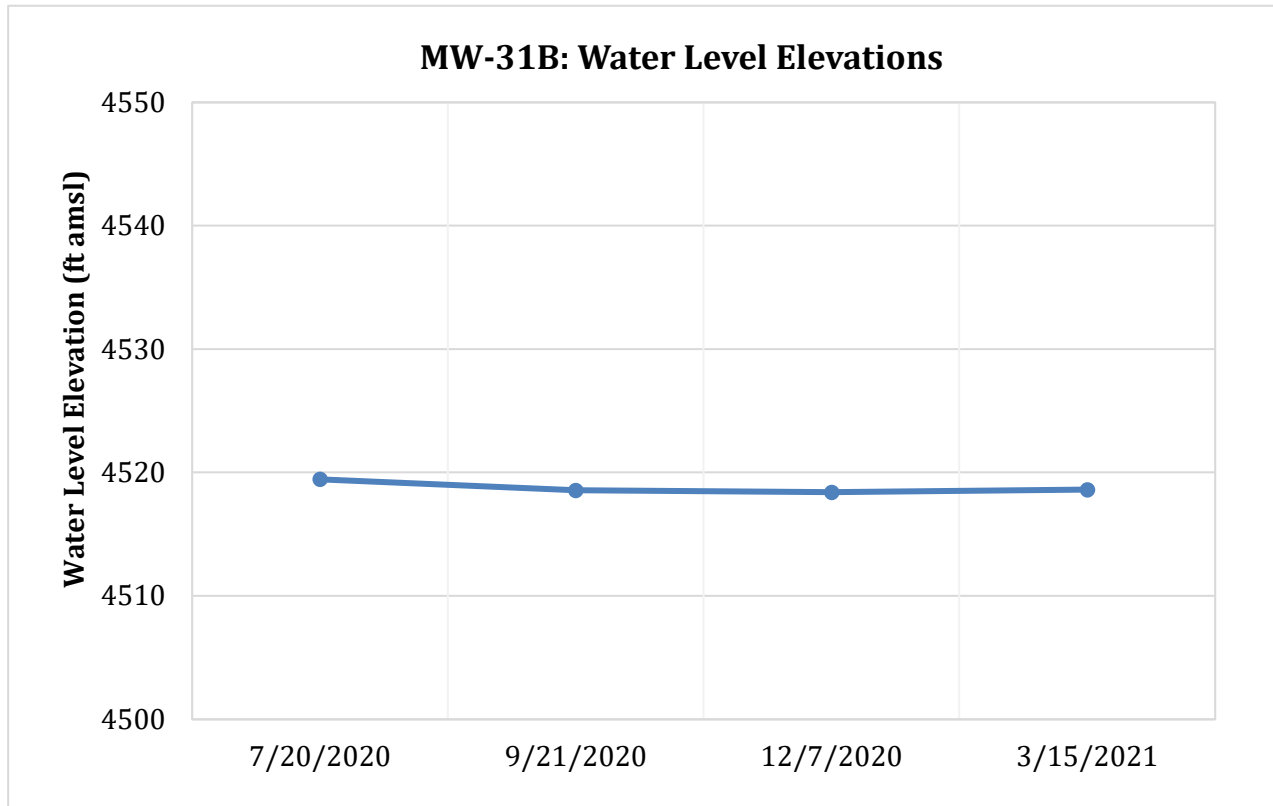




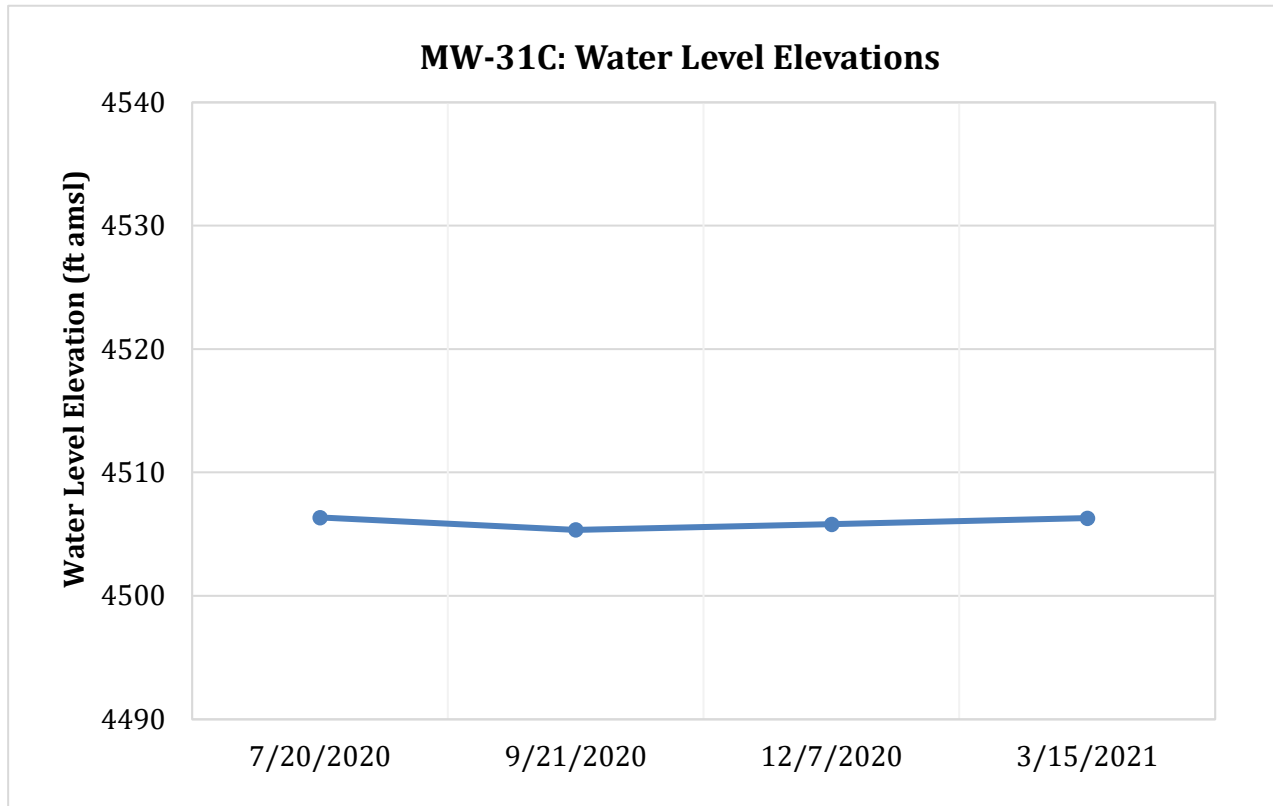
**Appendix G  
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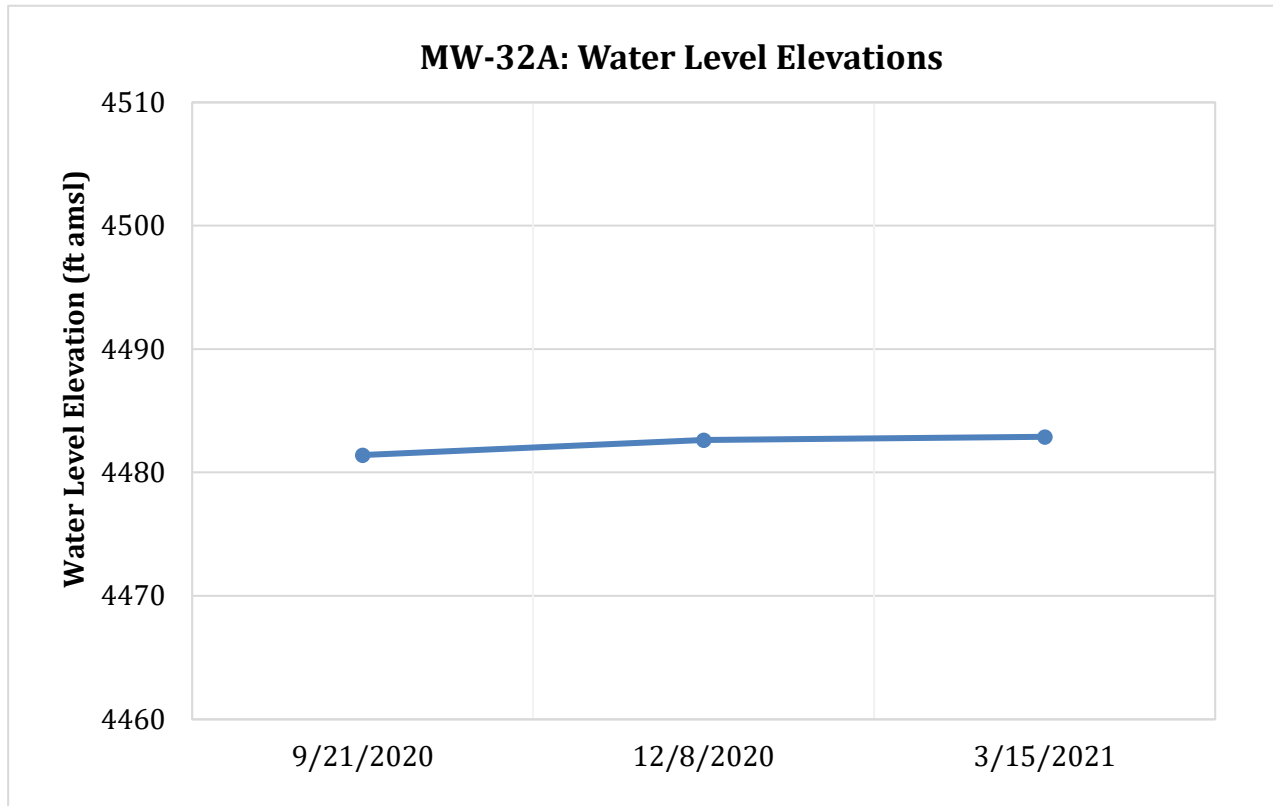
**Appendix G**  
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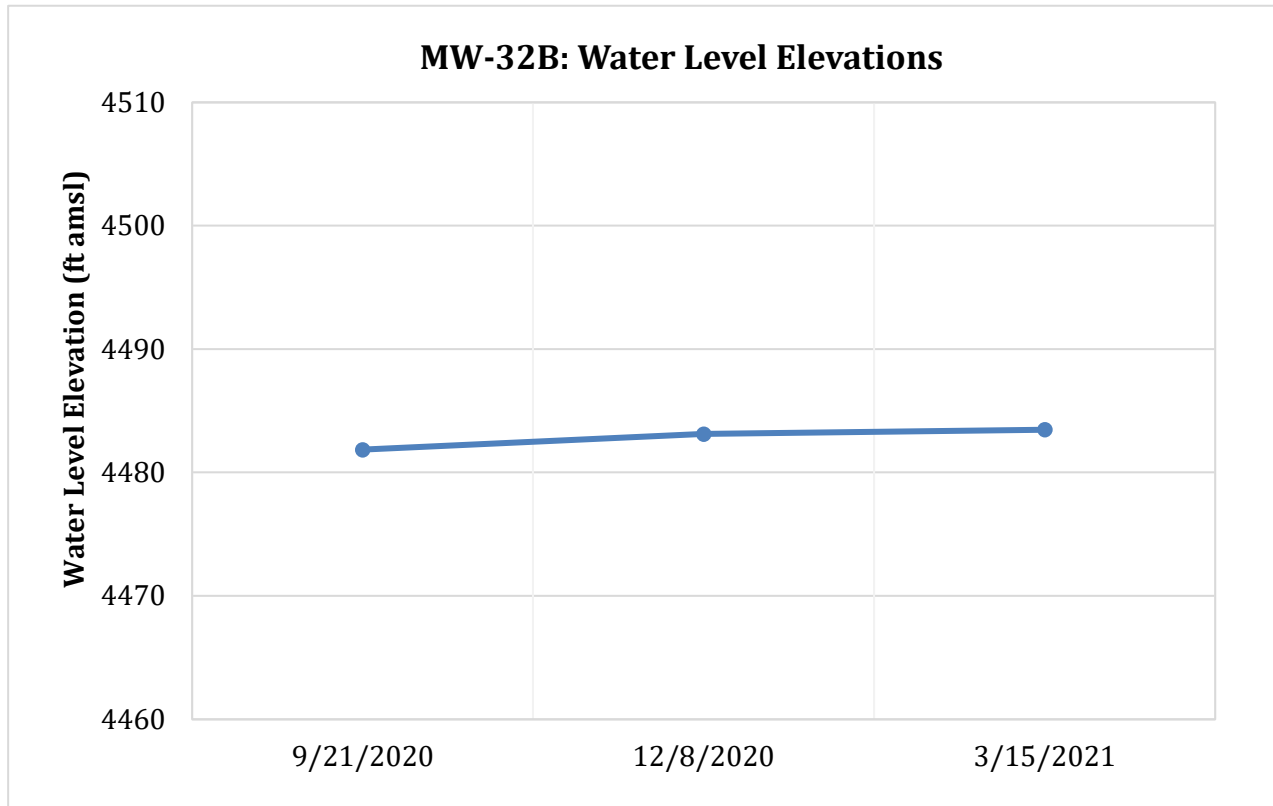
**Appendix G**  
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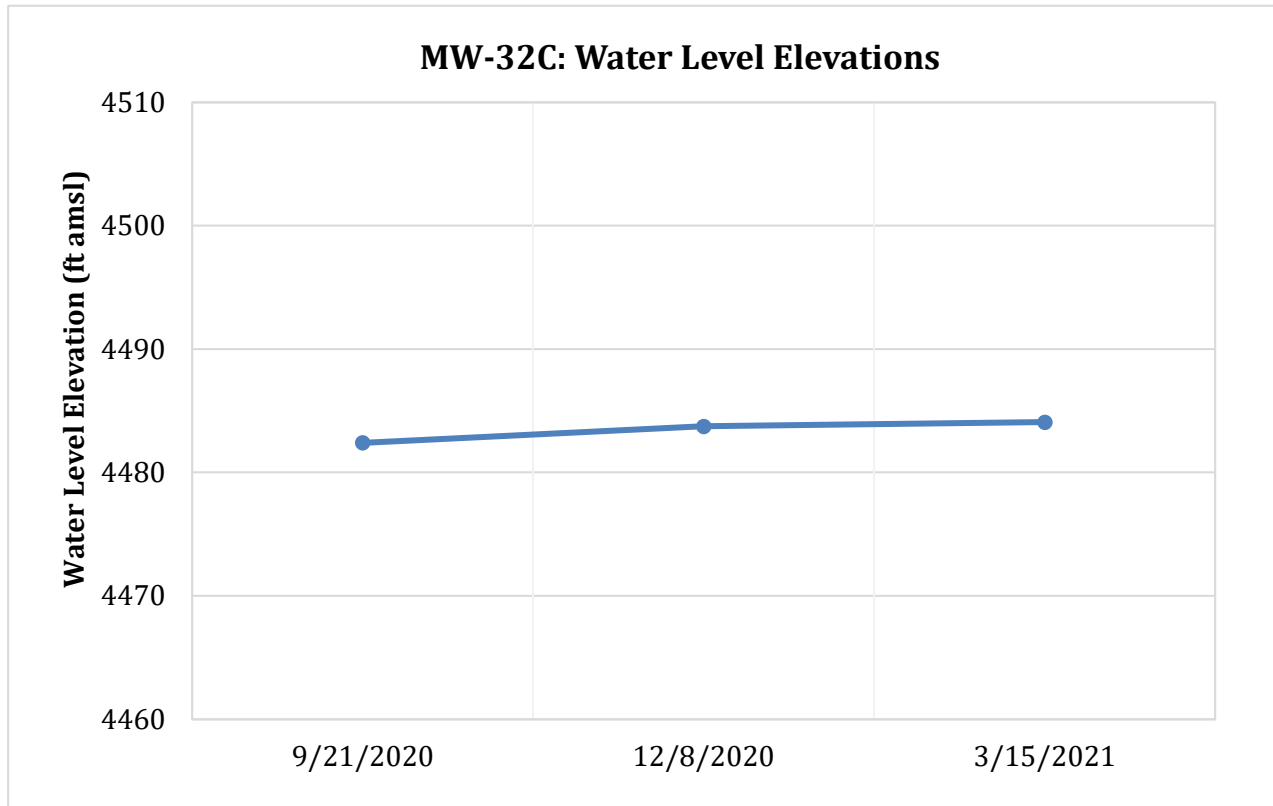
**Appendix G**  
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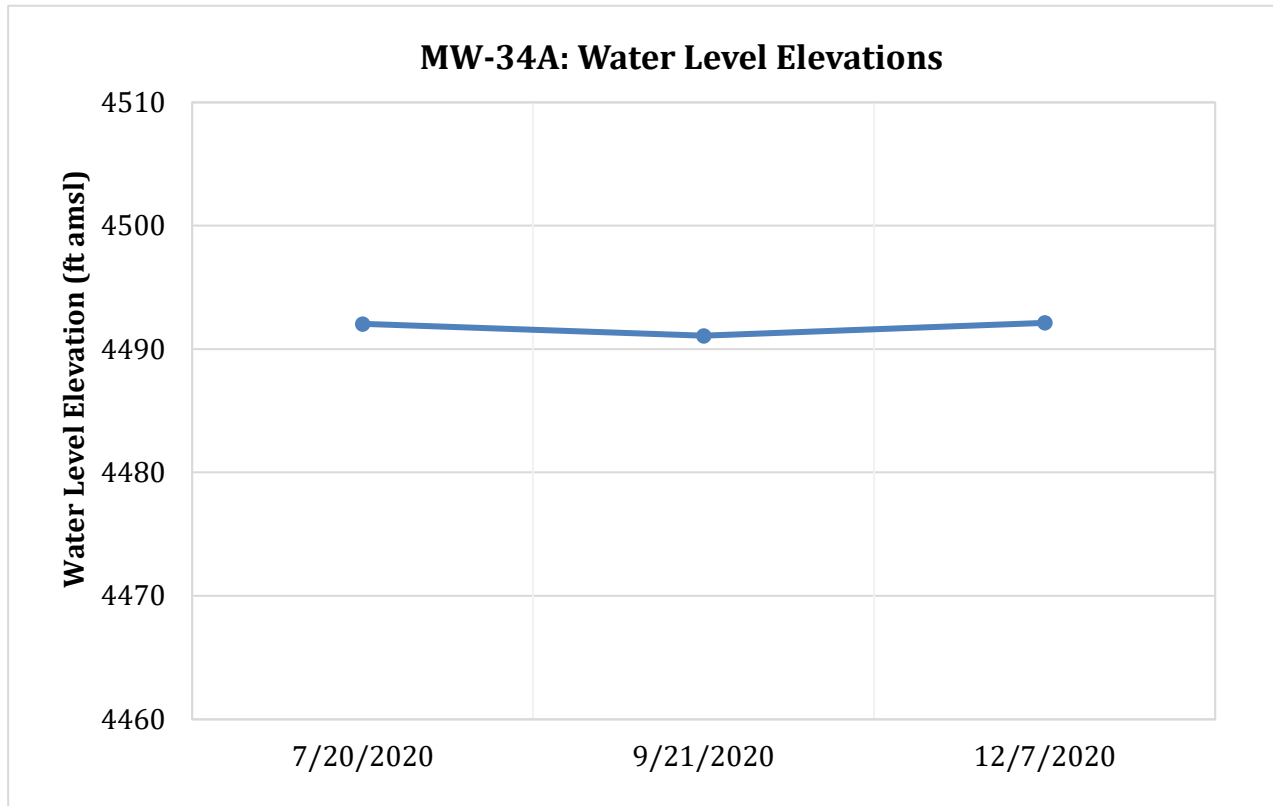
**Appendix G**  
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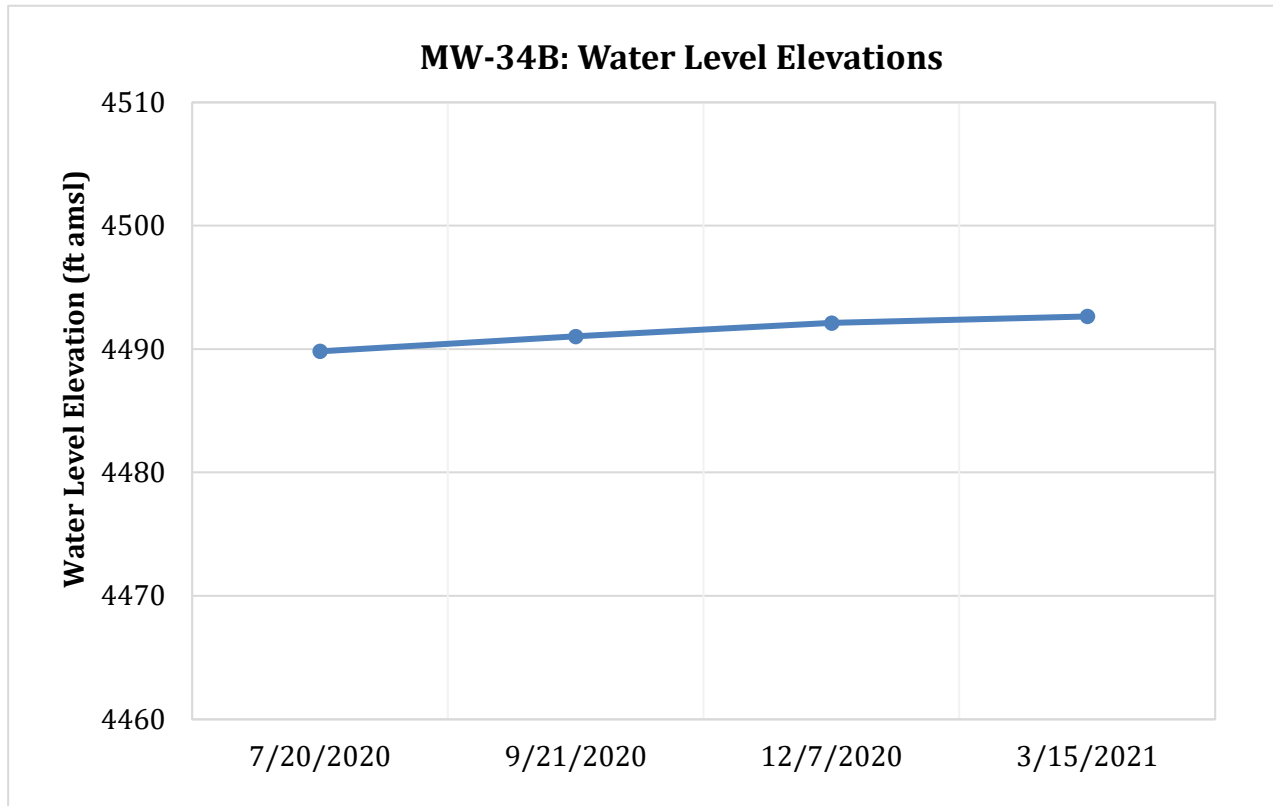
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**Appendix G**  
**Water Level Elevations**

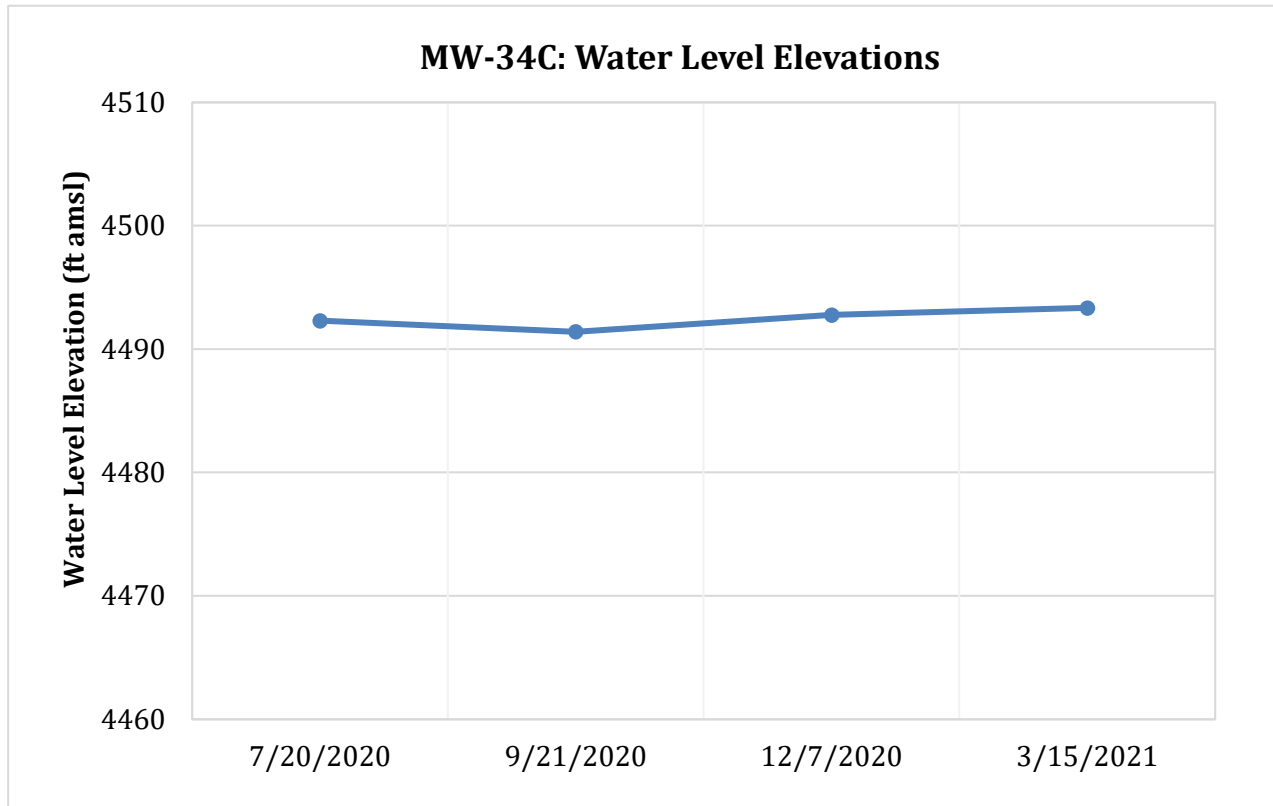


**Appendix G**  
**Water Level Elevations**

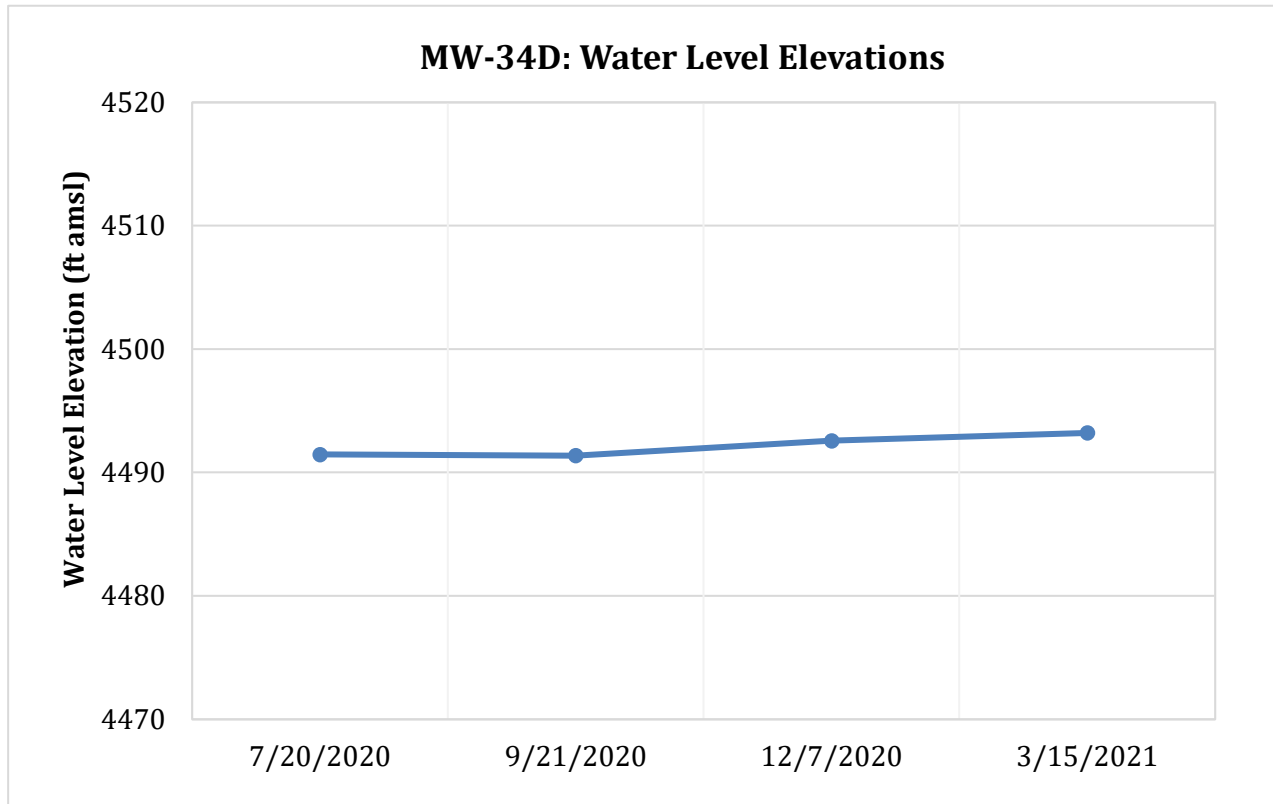




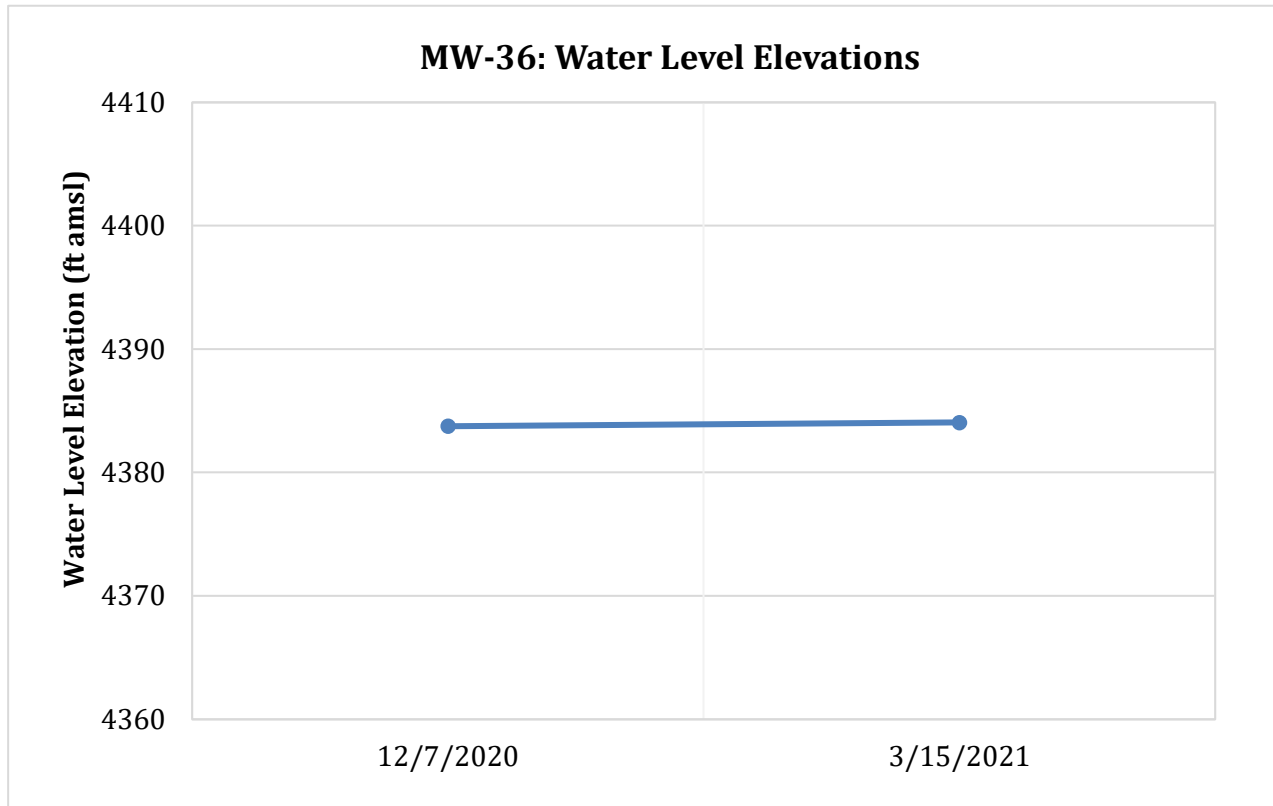
**Appendix G**  
**Water Level Elevations**



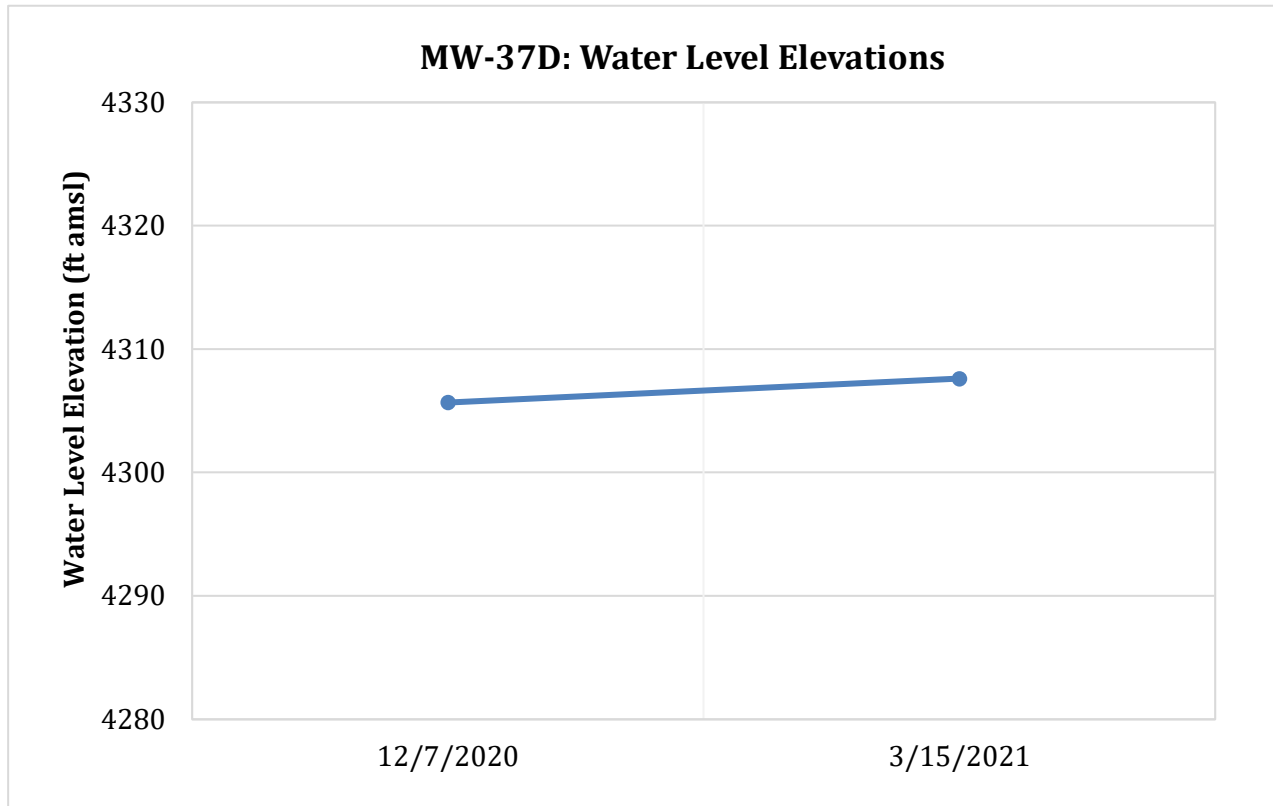
**Appendix G**  
**Water Level Elevations**



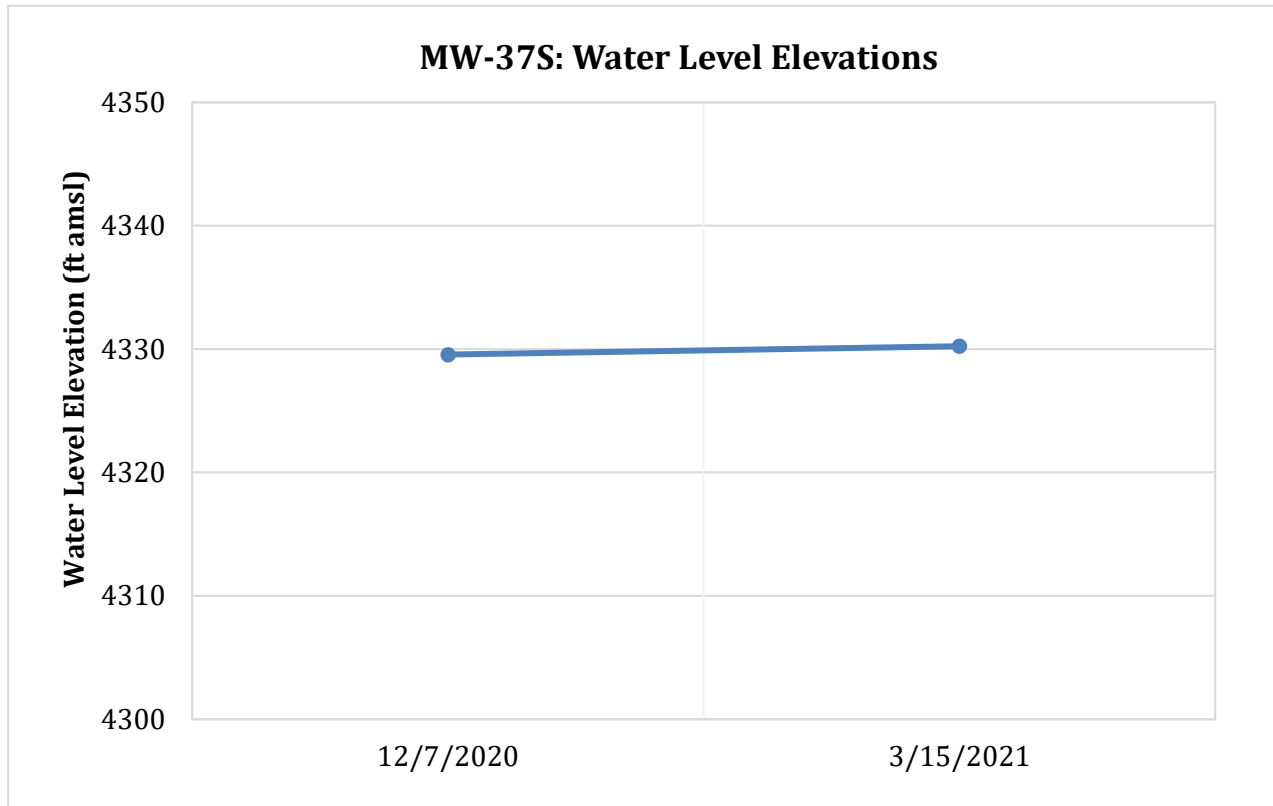
**Appendix G**  
**Water Level Elevations**



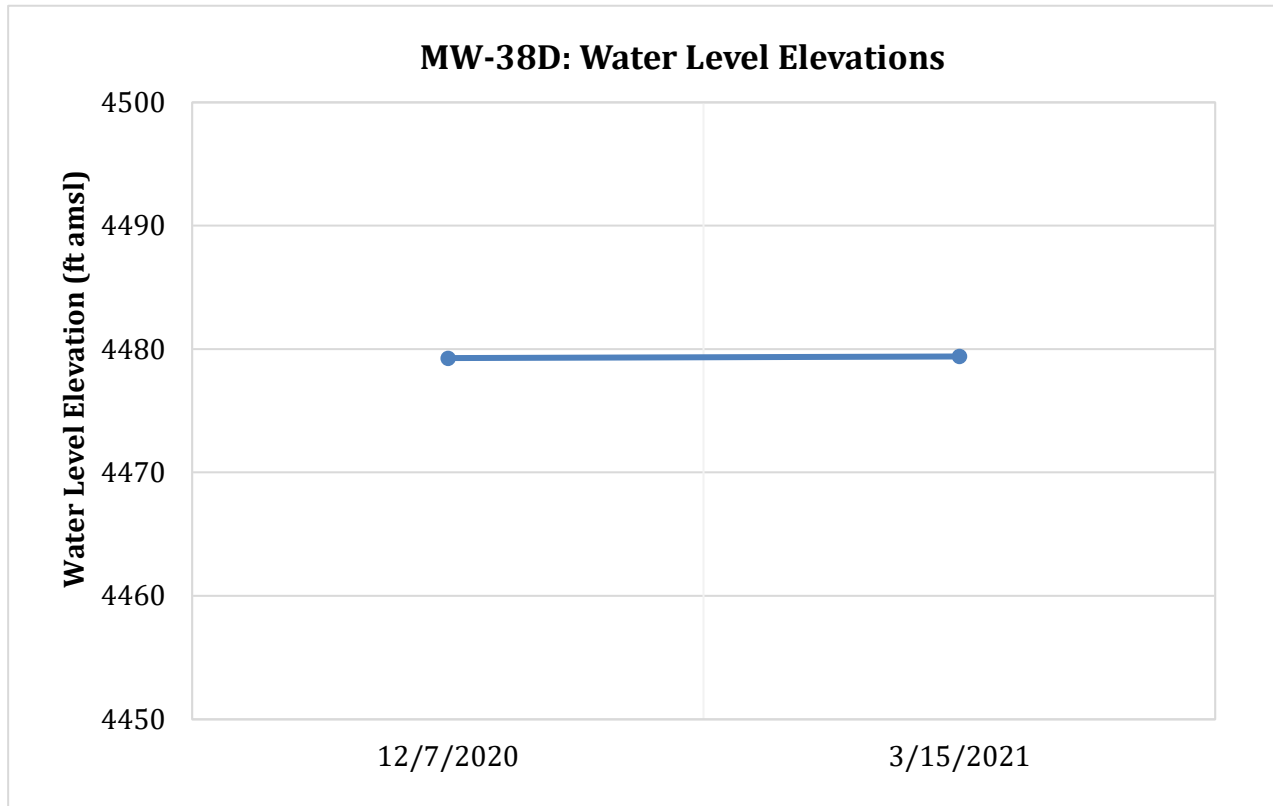
**Appendix G  
Water Level Elevations**



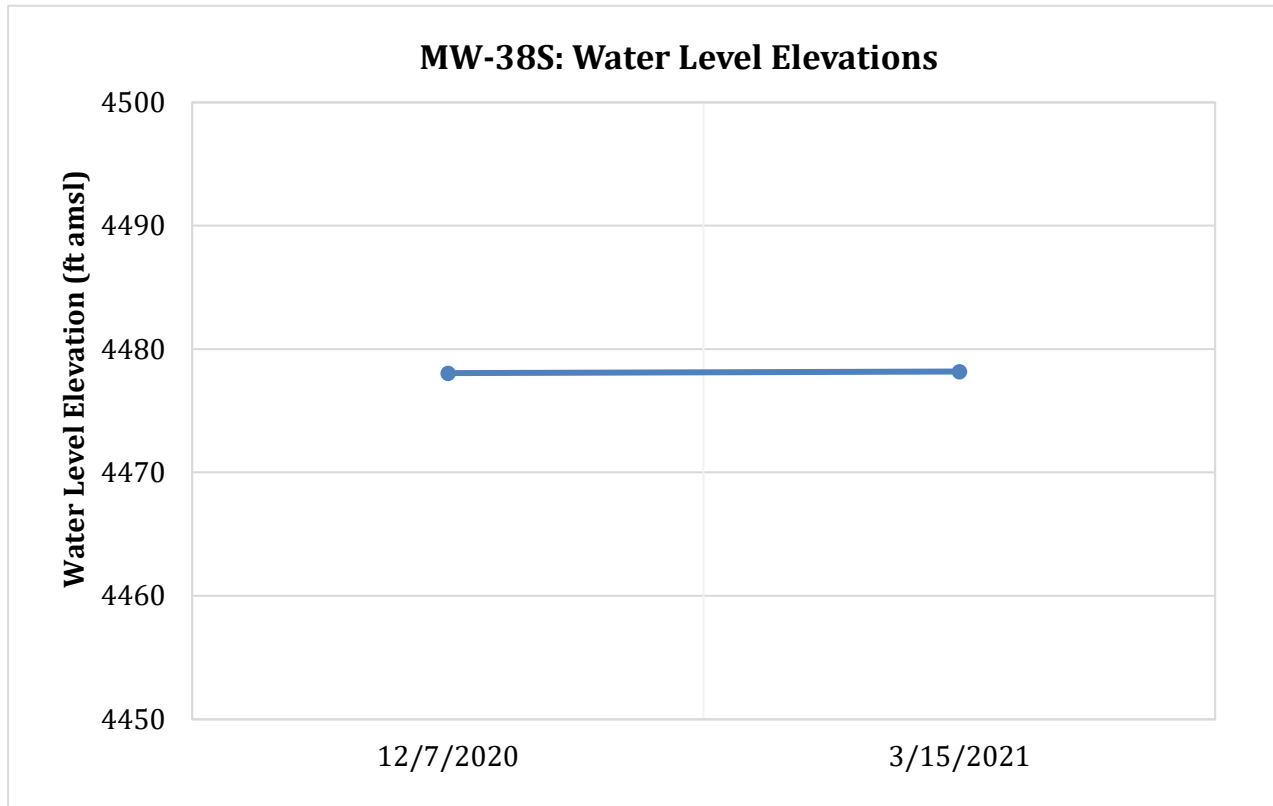
**Appendix G  
Water Level Elevations**



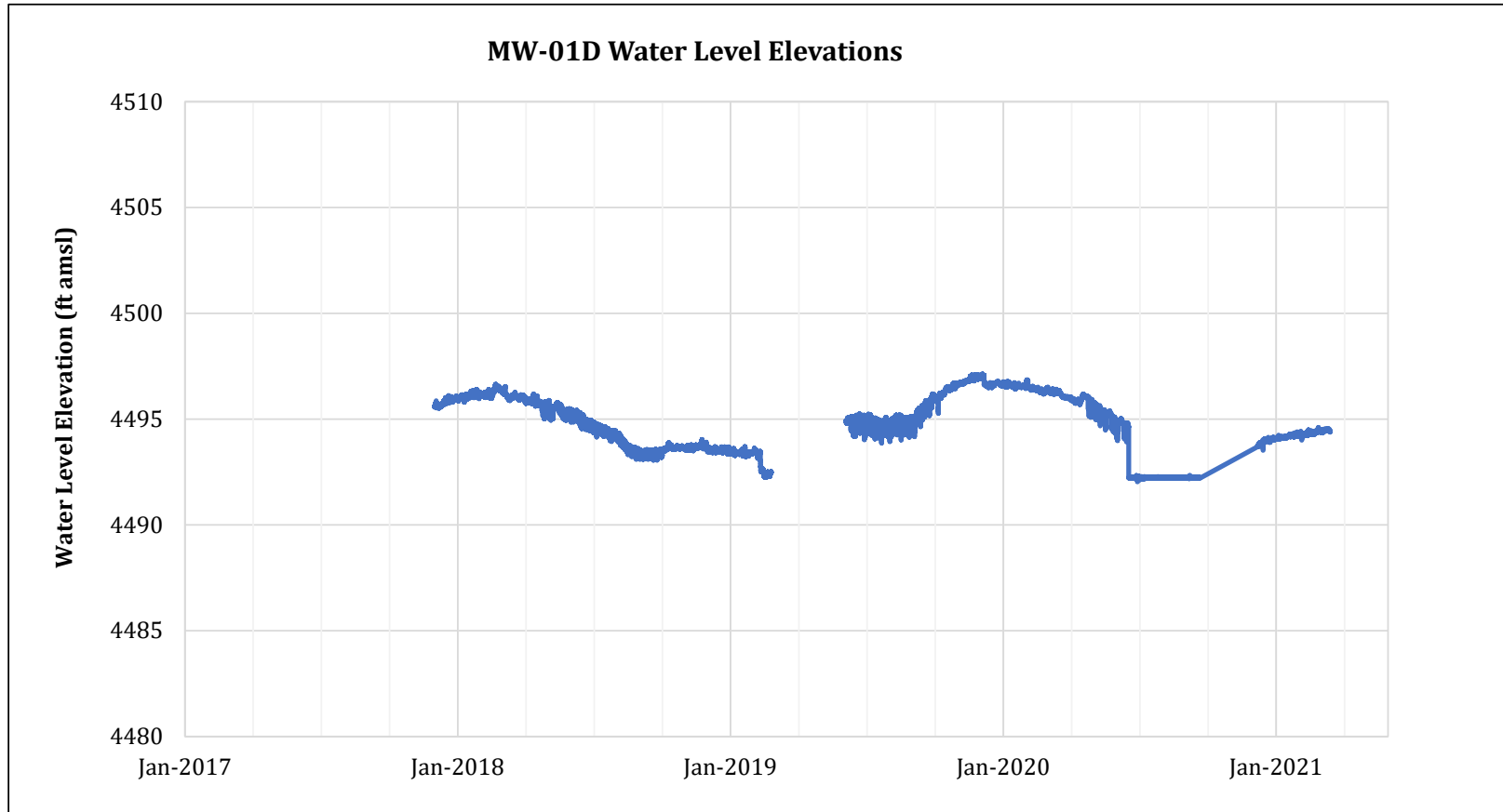
**Appendix G**  
**Water Level Elevations**



**Appendix G**  
**Water Level Elevations**

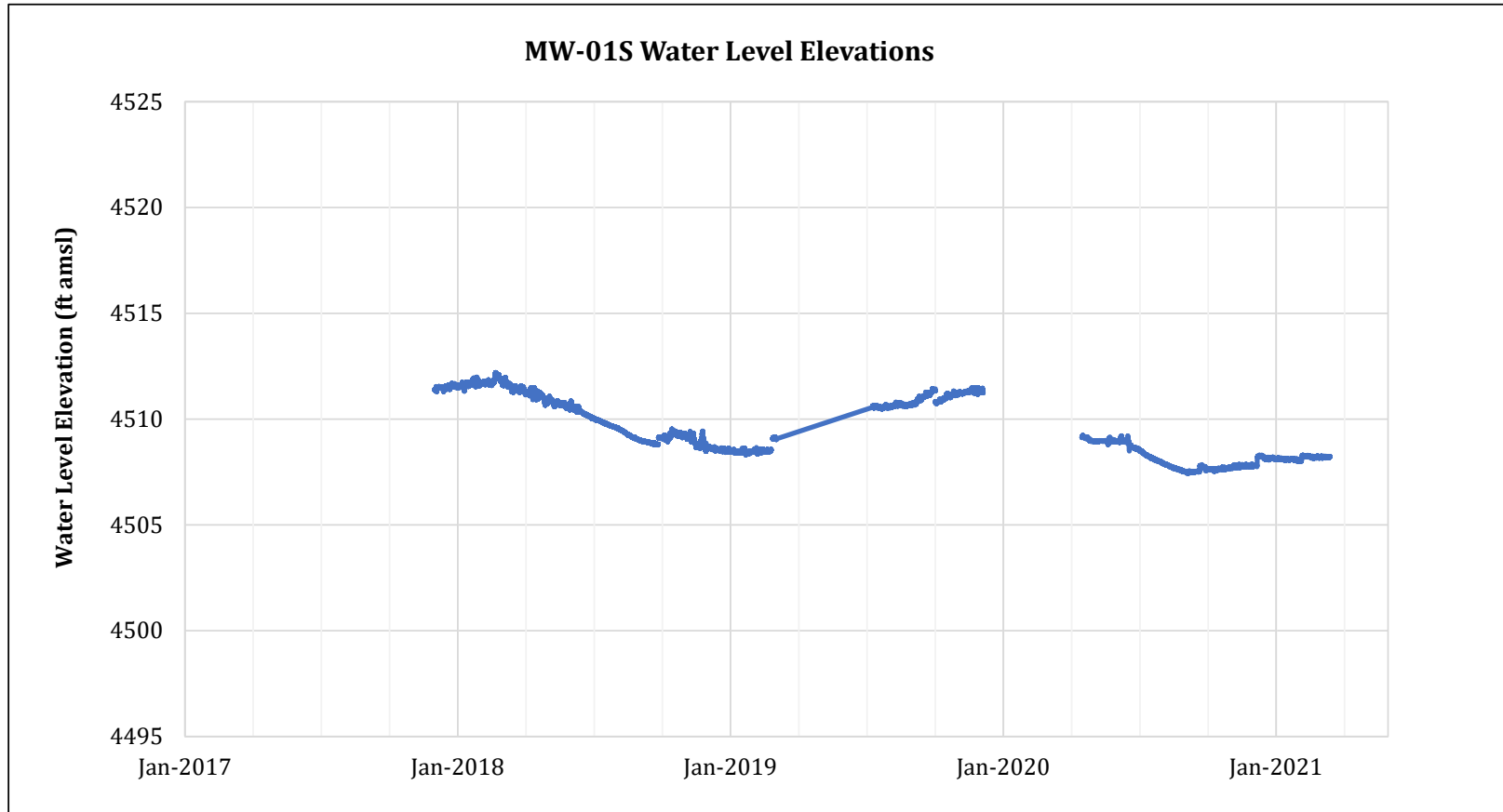


Appendix G  
Transducer Water Level Elevations

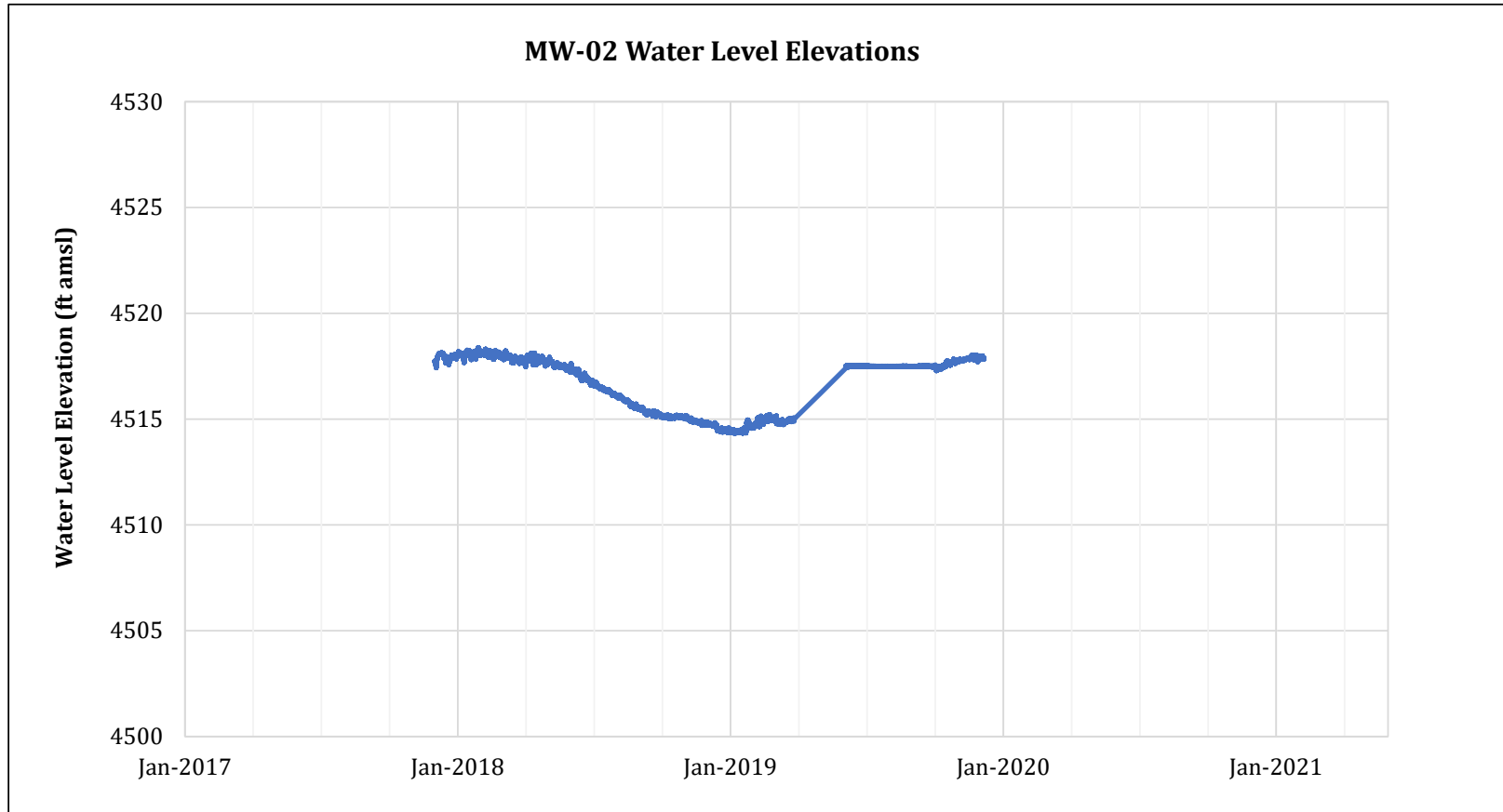




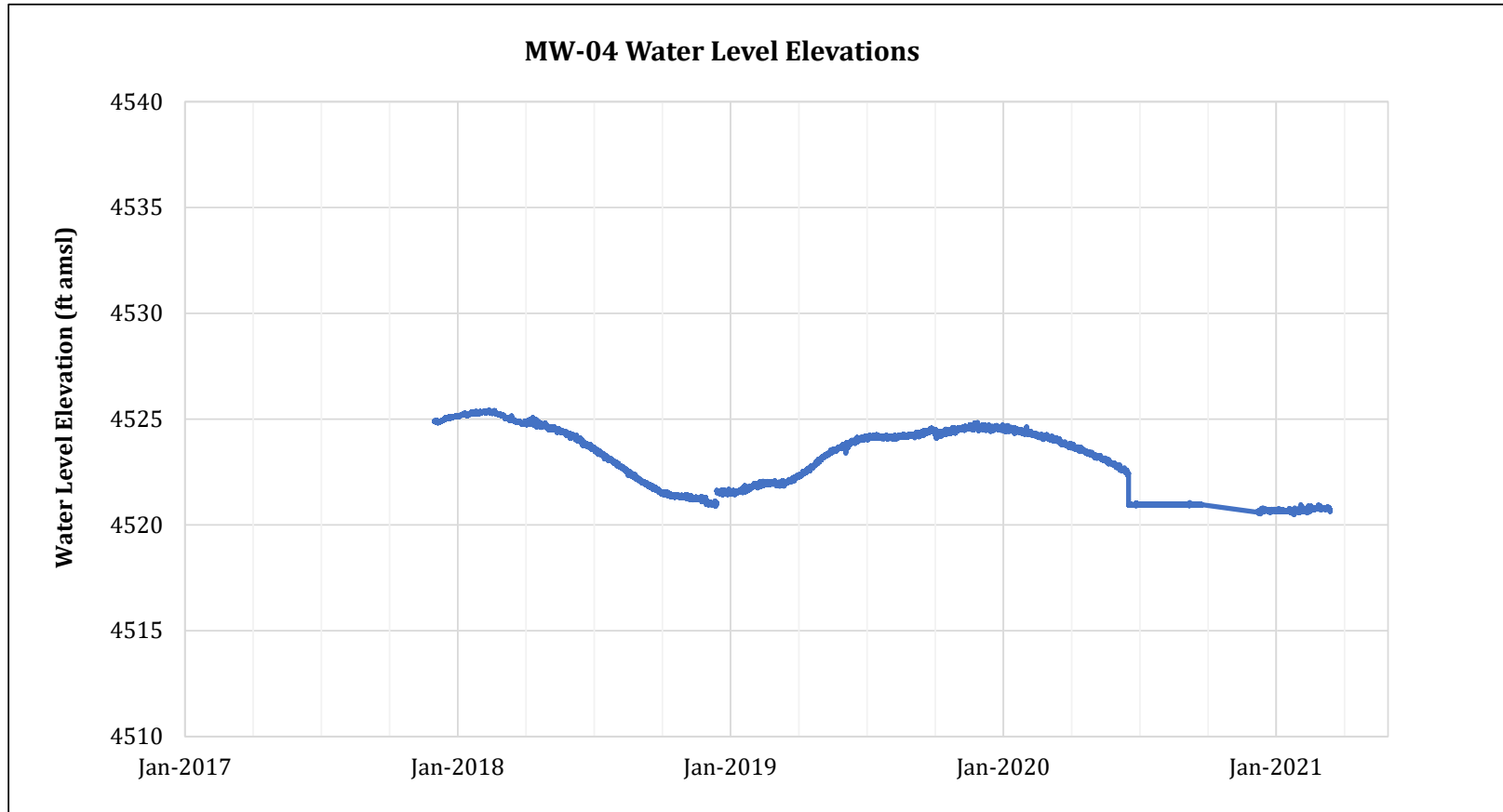
Appendix G  
Transducer Water Level Elevations



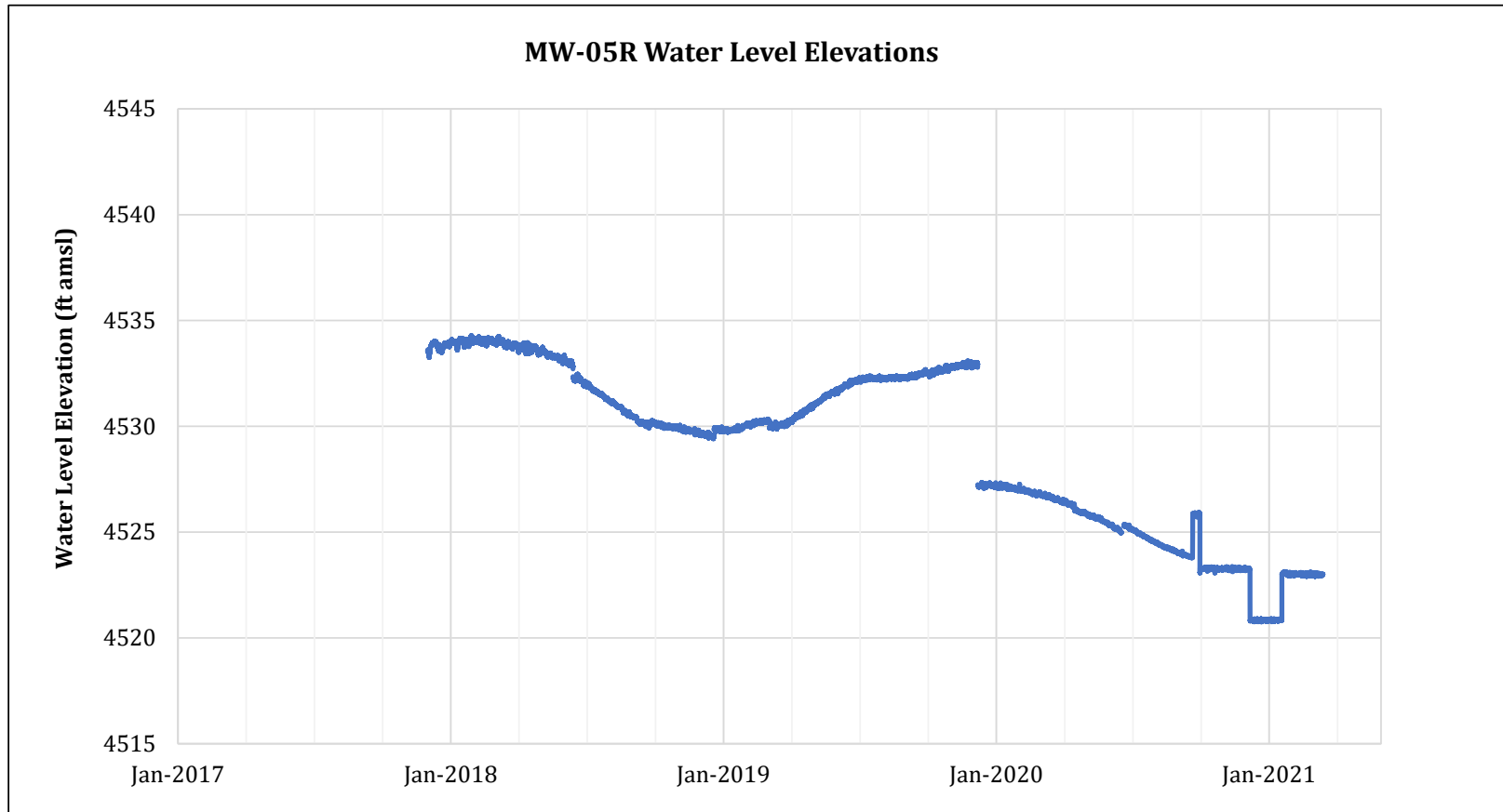
Appendix G  
Transducer Water Level Elevations



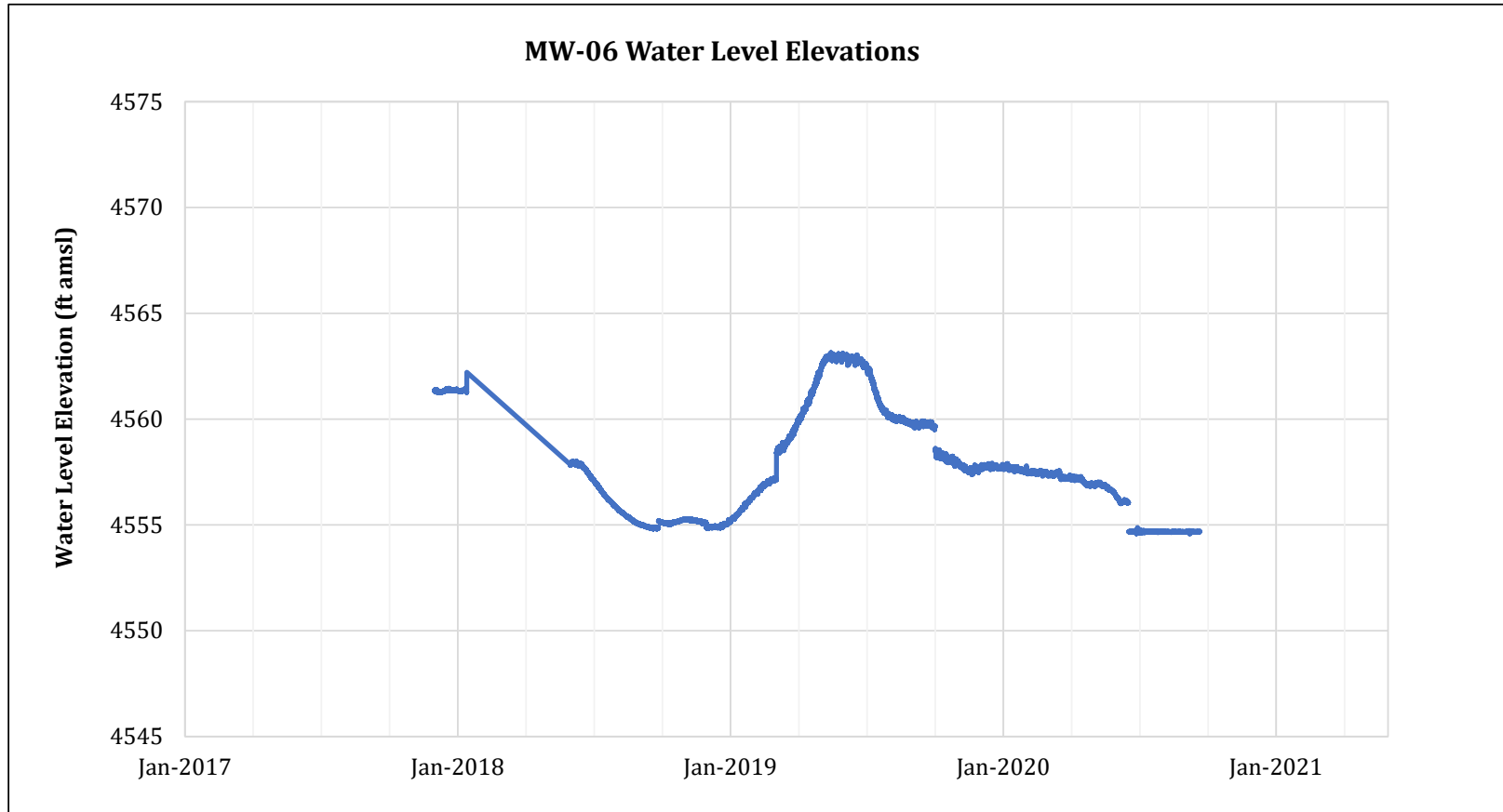
Appendix G  
Transducer Water Level Elevations



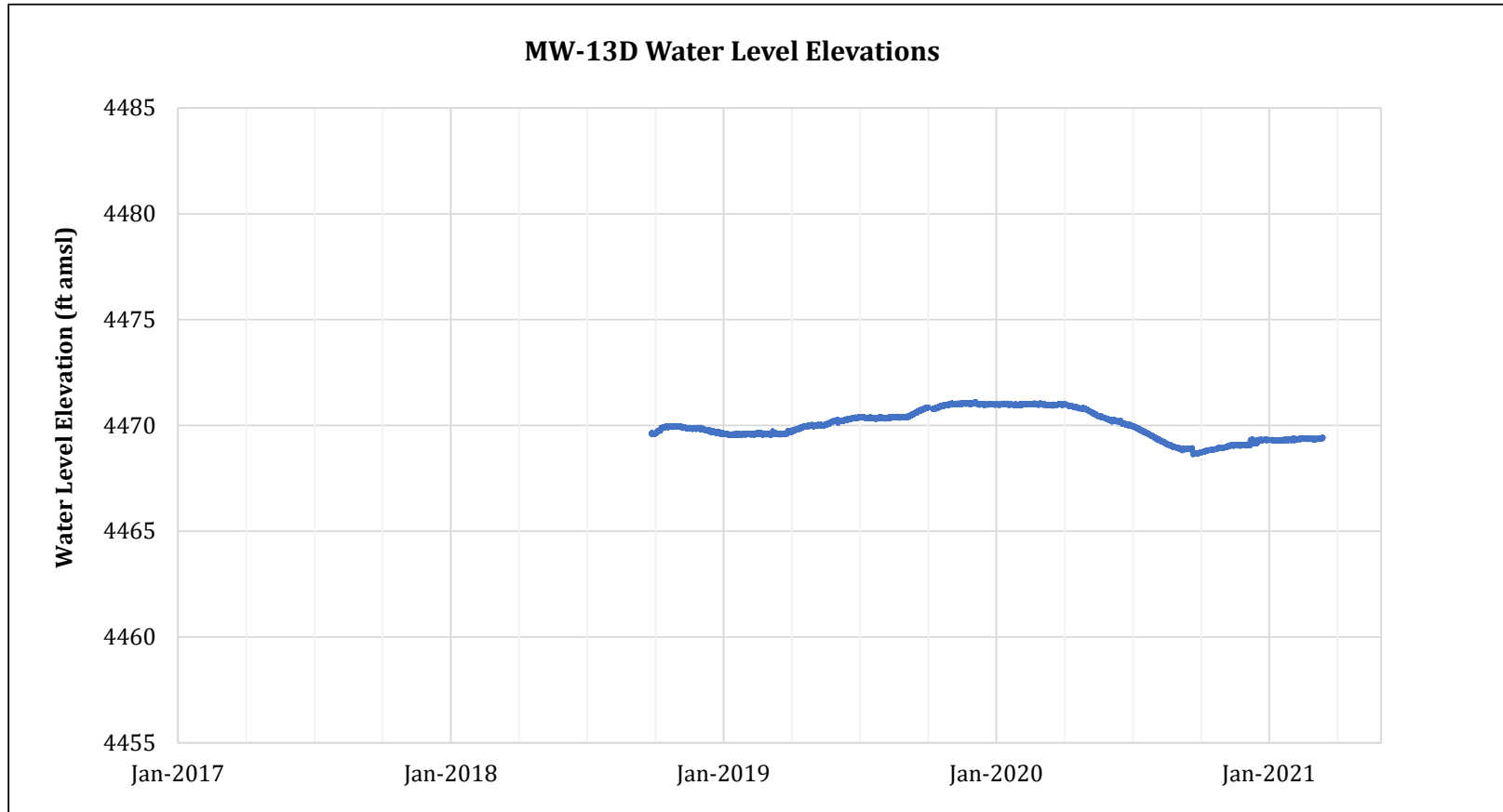
Appendix G  
Transducer Water Level Elevations



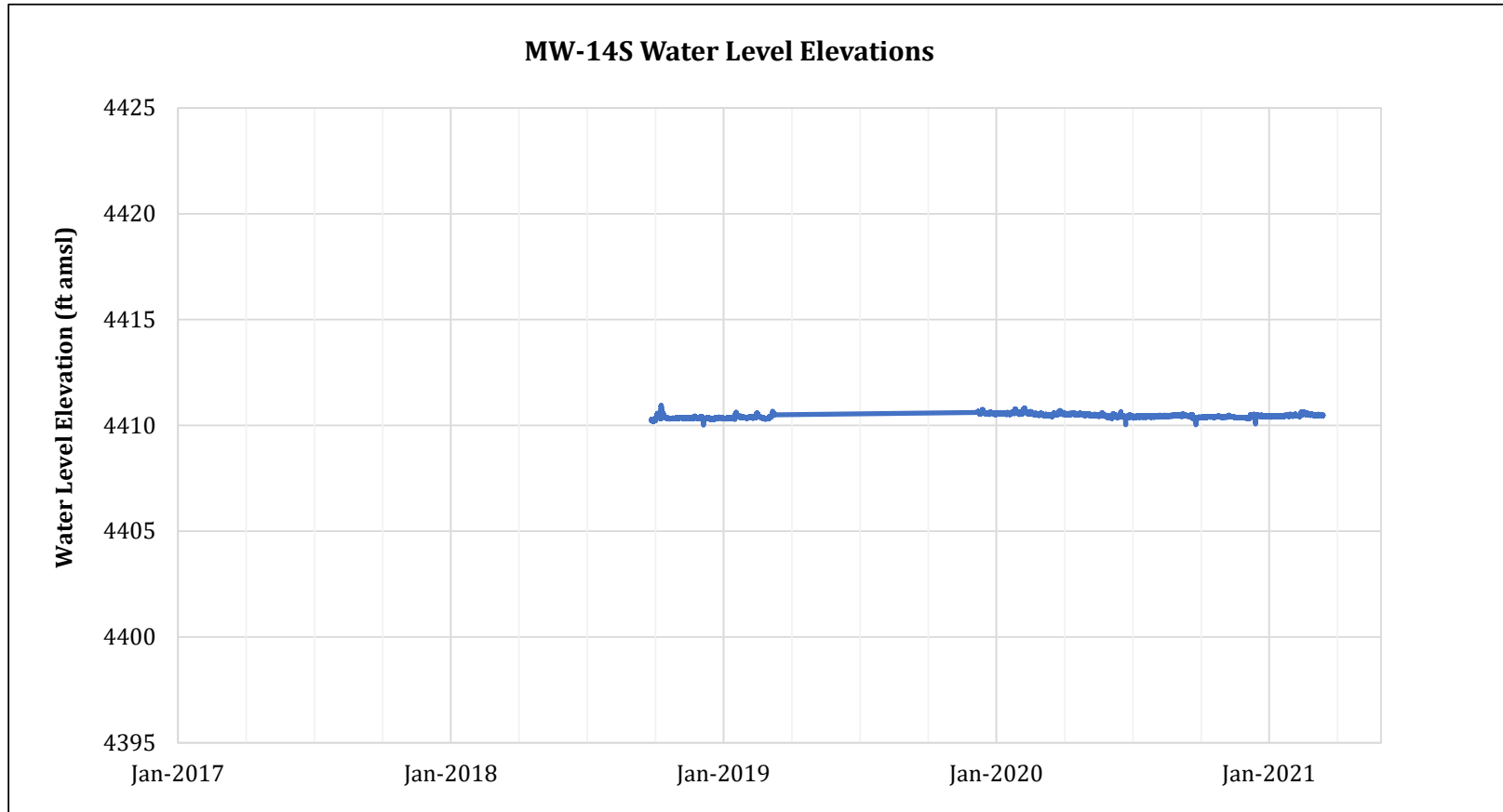
Appendix G  
Transducer Water Level Elevations



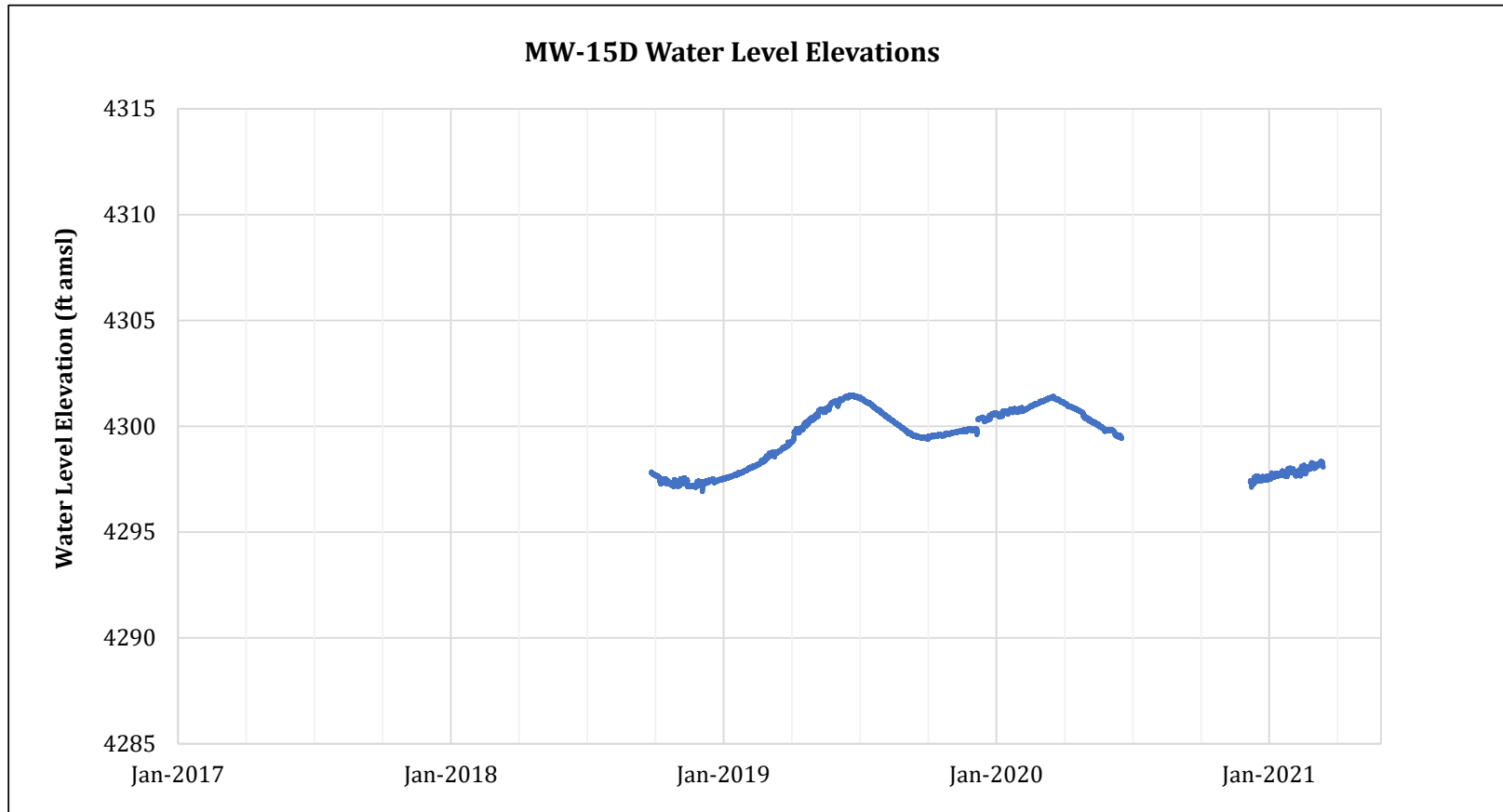
Appendix G  
Transducer Water Level Elevations



Appendix G  
Transducer Water Level Elevations

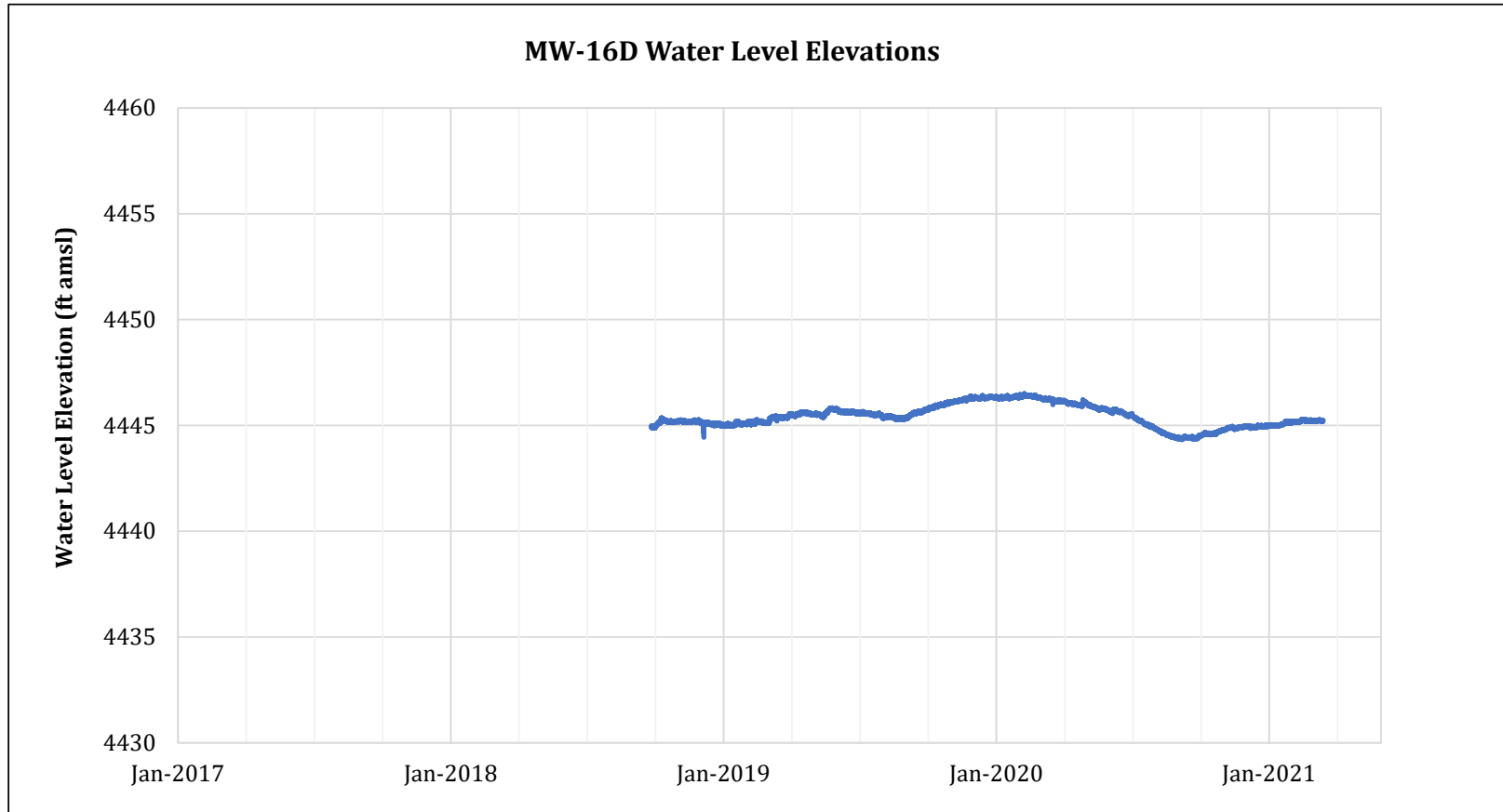


Appendix G  
Transducer Water Level Elevations

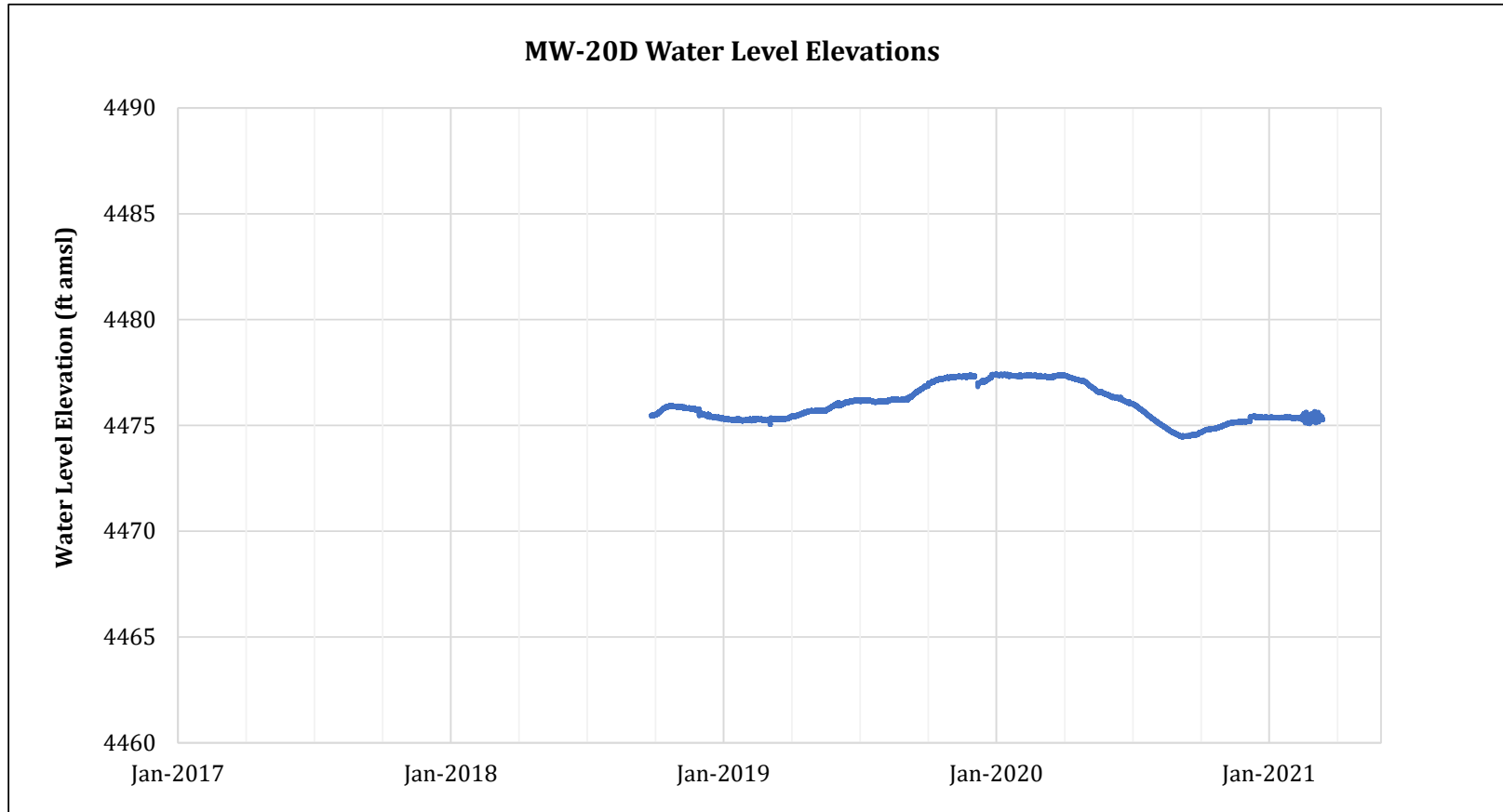




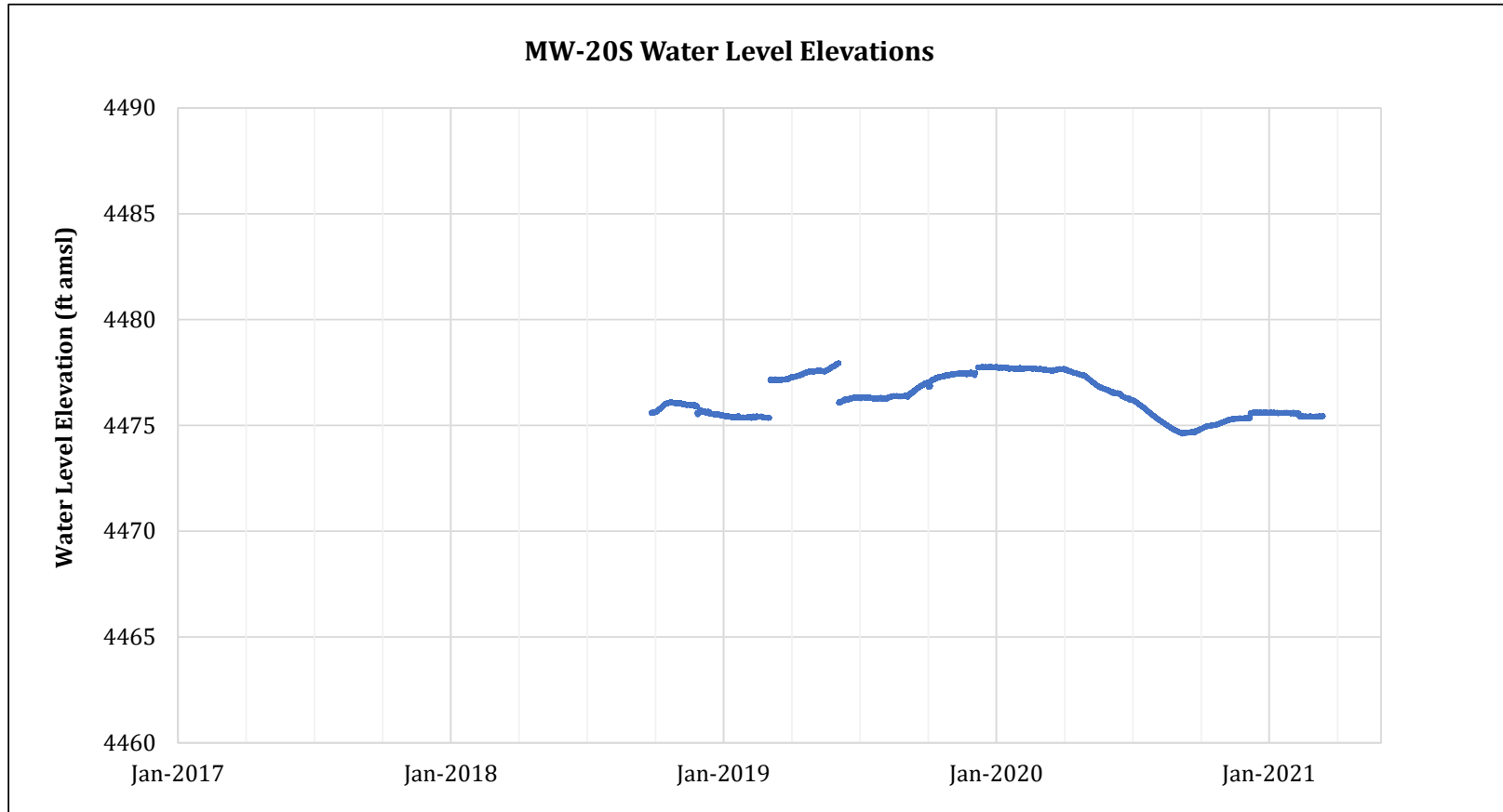
Appendix G  
Transducer Water Level Elevations



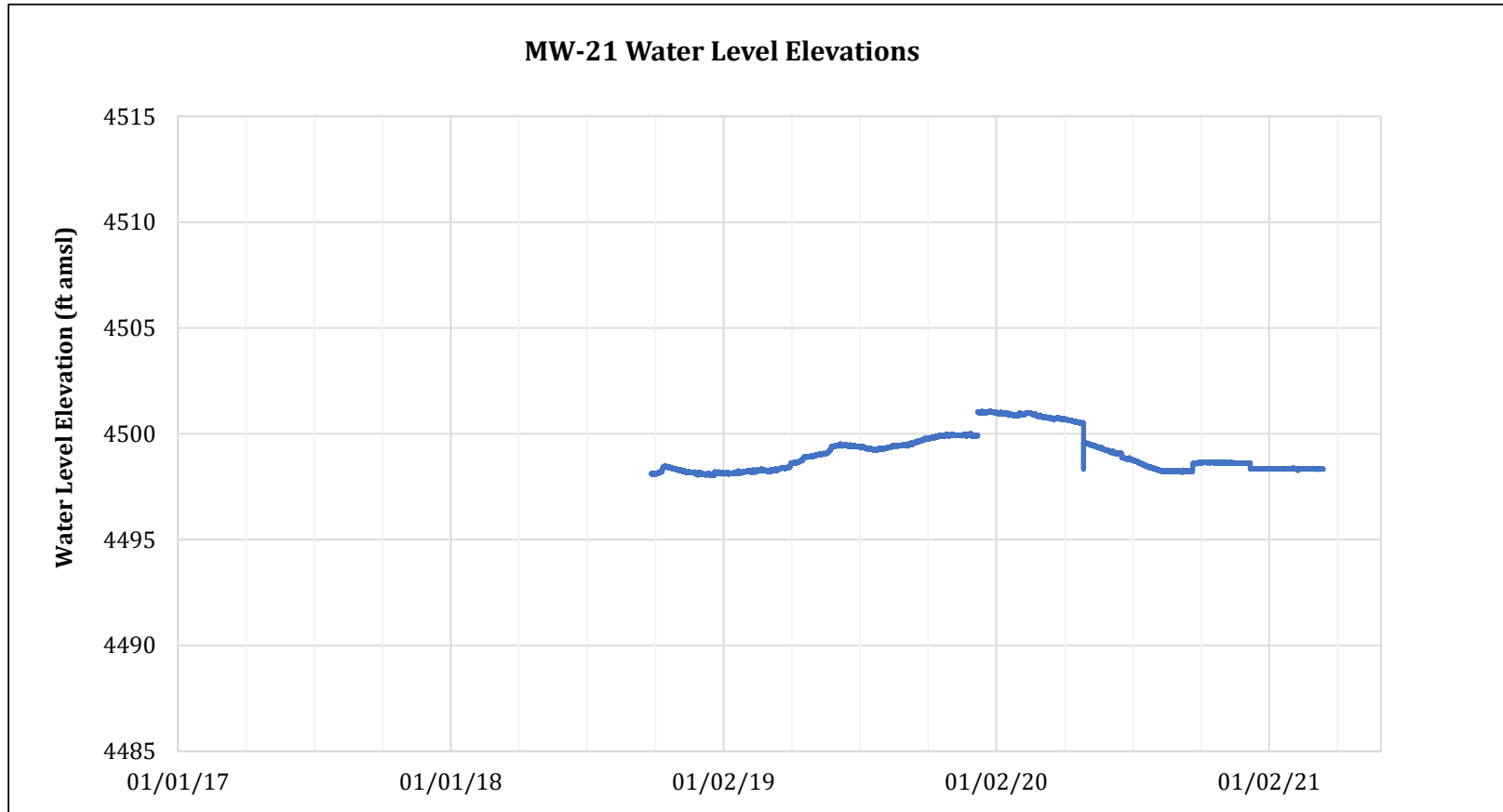
Appendix G  
Transducer Water Level Elevations



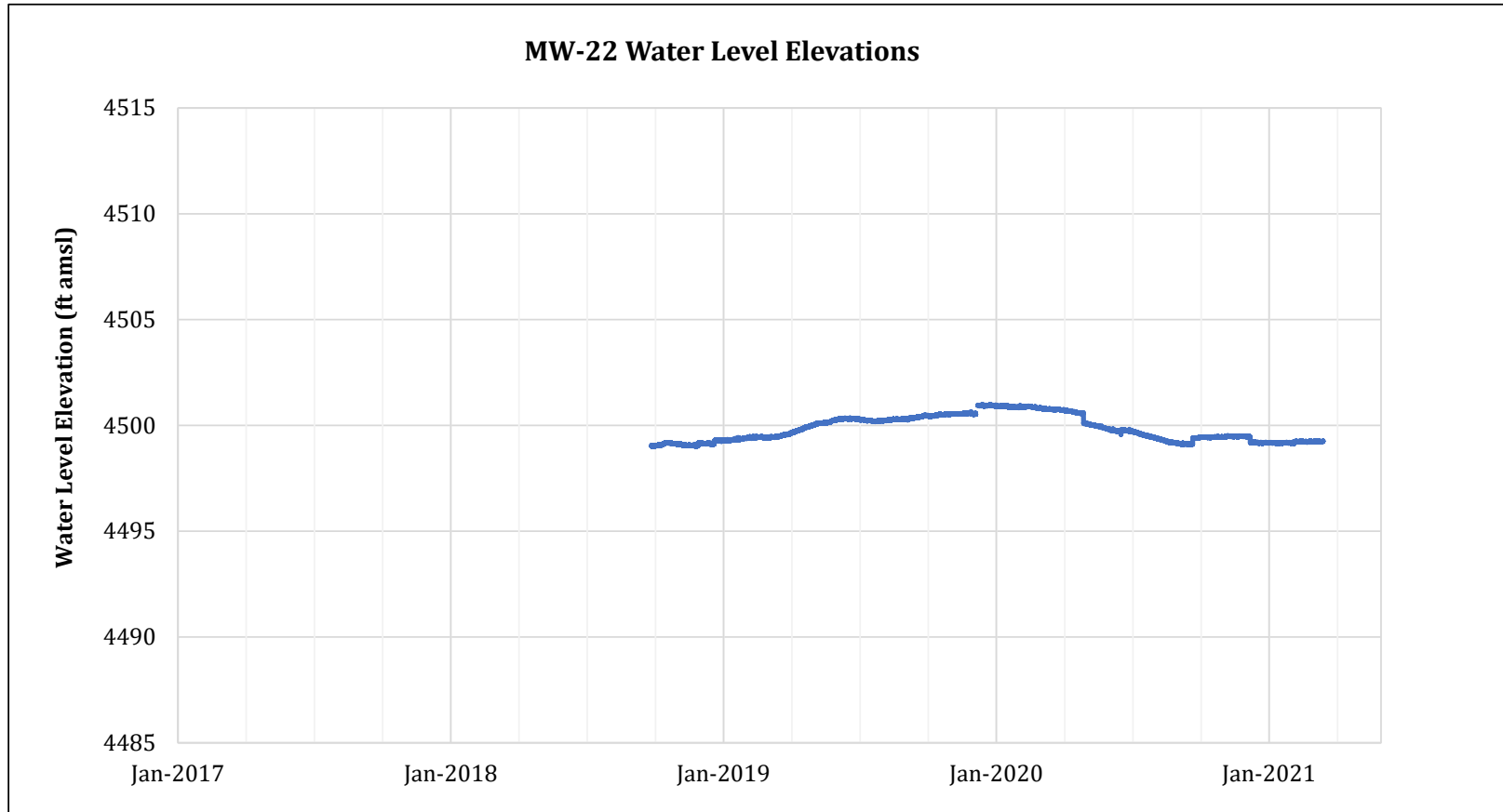
Appendix G  
Transducer Water Level Elevations



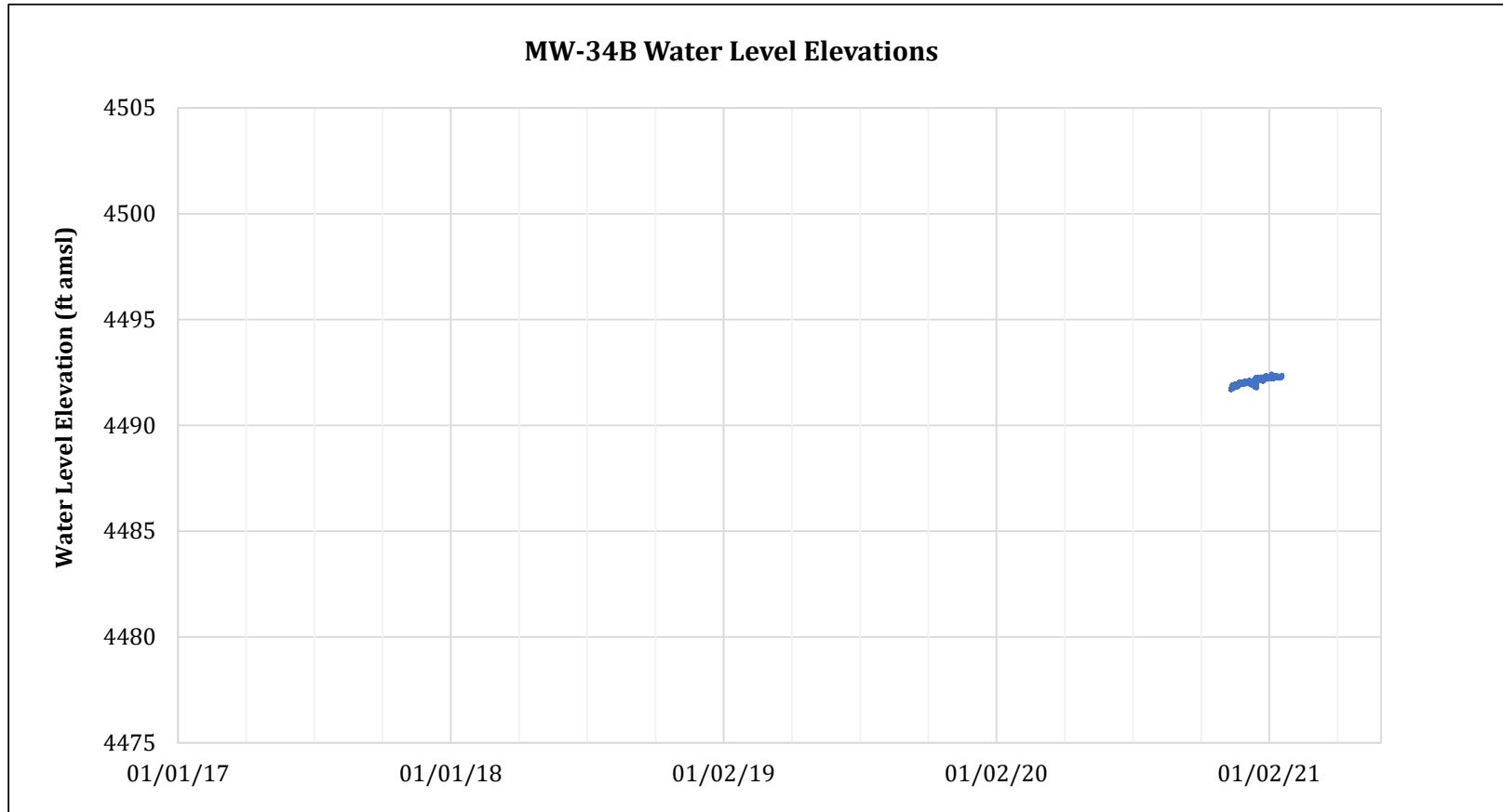
Appendix G  
Transducer Water Level Elevations



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Transducer Water Level Elevations

